

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 n  
Edition : 22.04.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 849 741  
Injection pump  
Pump designation : PE10P110A32OLS3844  
EP type number : 0 411 819 710  
Governor  
Governor design. : RQ300/1050PA187-20  
Governor no. : 0 421 801 429

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 443

1st version kW : 265.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 12.50...12.60  
-----  
Del. quantity cm<sup>3</sup>/ : 12.3...12.5  
-----  
100 s : (12.0...12.7)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s : (0.8)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 8.0...8.3  
Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
100 s : (1.2...2.3)  
Spread cm<sup>3</sup> : 0.4  
100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 600  
Rack travel in mm : 13.60...14.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 123.0...125.0  
1000 : (120.5...127.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 13.7

Testing:  
1st rack travel in: 11.50

Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

Testing:

Speed rpm : 200  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00  
Rack travel in mm : 2.00  
Speed rpm : 400...440

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1050  
Del.quantity cm3/ : 134.0...138.0  
1000 s: (131.0...141.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 o  
Edition : 05.02.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 401 849 742  
Injection pump  
Pump designation : PE10P110A32OLS3844  
EP type number : 0 411 819 710  
Governor  
Governor design. : RQV300..1050PA884-2  
Governor no. : 0 421 813 688

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 443

1st version kW : 265.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
                  - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
                  216-261-288-333

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 12.3...12.5

100 s: (12.0...12.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 300.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s: (1.2...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.10...1.40

2nd speed rpm : 650  
travel mm : 5.00...5.40

3rd speed rpm : 1100  
travel mm : 8.20...8.60

4th speed rpm : 1160  
travel mm : 9.20...9.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1080

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 123.0...125.0

1000 : (120.5...127.5)

Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

Remarks:  
:

#### RATED SPEED

1st version  
Control lever  
position degrees: 116...120

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1145...1175  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 81...89

Testing:  
Speed rpm : 200  
Minimum rack travel: 9.00  
Speed rpm : 300  
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION  
Speed rpm : 300...420

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 134.0...138.0  
1000 s: (131.0...141.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 21,6 a4  
Edition : 06.04.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 870 091

Injection pump  
Pump designation : PE12P120A520/SRS428-  
1

EP type number : 0 411 820 034  
Governor  
Governor design. : RSUV300...900POA320-  
1

Governer no. : 0 421 829 107

Customer-spec. information  
Customer : MWM

Engine : TBD 234 V12

1st version kW : 600.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

A05

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 2- 9- 10- 5- 6-  
11- 12- 3- 4- 7- 8

Phasing : 0-30-60-90-120-150-  
180-210-240-270-300-  
330

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 14.50...14.60

Del. quantity cm<sup>3</sup>/ : 24.9...25.1

100 s : (24.6...25.4)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 2.0...2.6

100 s : (1.7...2.9)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Del. quantity : 249.0...251.0

1000 : (246.0...254.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 70...78

Testing:

1st rack travel in: 13.50  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 965...995  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 320...380

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 450  
Rack travel in m: 14.50...14.60  
3rd speed rpm : 280  
Rack travel in m: 15.70...16.30

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:  
:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 11,6o15  
Edition : 11.03.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 401 876 323

Injection pump  
Pump designation : PE6P120A32ORS415-1  
EP type number : 0 411 826 123  
Governor  
Governor design. : RSV250...1100P5A508-4  
Governor no. : 0 421 833 186

Customer-spec. information  
Customer : DAF

Engine : DKV 1160

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 16.7...16.9

100 s : (16.4...17.2)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 6.5...6.7

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h : 700

Del. quantity : 167.0...169.0

1000 : (164.0...172.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever

position degrees: 49...57

Testing:

1st rack travel in: 8.90

Speed rpm : 1135...1145

2nd rack travel in: 4.00

Speed rpm : 1175...1205

3rd rack travel in: 4.00  
Speed rpm : 1200...1230  
4th rack travel in: 1370  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8  
Speed rpm : 250  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 650...710

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 650  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 1090  
Rack travel in m: 9.90...10.10  
3rd speed rpm : 825  
Rack travel in m: 10.60...10.80  
4th speed rpm : 875  
Rack travel in m: 10.30...10.50

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 11.00...11.10

##### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 9.80...10.00  
2nd pressure hPa : 290  
Rack travel in m: 10.70...10.90  
3rd pressure hPa : 260  
Rack travel in m: 10.30...10.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1090  
Del. quantity cm<sup>3</sup>/ : 153.0...157.0  
1000 s: (150.0...160.0)  
Aneroid pressure h: -  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 135.0...137.0  
1000 s: (132.0...140.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.90  
Speed rpm : 1135...1145

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 320.0...360.0  
1000 s: (316.0...364.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.20...6.40

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : ENA 10,1 f  
 Edition : 25.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 332

Injection pump  
 Pump designation : PE6P100A82QLS130  
 EP type number : 0 411 806 179  
 Governor  
 Governor design. : RSV250...1000P1A532  
 Governor no. : 0 421 833 273

Customer-spec. information  
 Customer : ENASA

Engine : 95 T1 AX,

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 750  
 -----  
 Rack travel in mm : 11.90...12.00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 11.3...11.5  
 -----  
 100 s: (11.1...11.7)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----  
 2nd speed rpm : 250.0  
 Rack travel in mm : 7.9...8.1  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.2  
 100 s: (1.5...2.4)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Del. quantity : 113.0...115.0  
 1000 : (111.0...117.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:  
 1st rack travel in: 10.90  
 Speed rpm : 1040...1050  
 2nd rack travel in: 4.00  
 Speed rpm : 1070...1100  
 3rd rack travel in: 4.00  
 Speed rpm : 1080...1110  
 4th rack travel in: 1240

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 19...27

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 11.90...12.00

2nd speed rpm : 450

Rack travel in m: 11.90...12.00

3rd speed rpm : 250

Rack travel in m: 13.20...13.80

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 260.0...280.0

1000 s: (256.0...284.0)

Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.90...6.10

Remarks:

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#### APPLICATION

Special-purpose vehicle



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : ENA 11,9 g  
 Edition : 25.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 333  
 Injection pump  
 Pump designation : PE6P120A320RS257  
 EP type number : 0 411 826 075  
 Governor  
 Governor design. : RSV250...1100POA533  
 Governor no. : 0 421 833 274

Customer-spec. information  
 Customer : ENASA

Engine : 96 T1A0

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder assembly : 1 688 901 019  
 Opening pressure, bar : 207...210  
 Orifice plate diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
 Prestroke mm : 2,90...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050  
 Rack travel in mm : 11.20...11.30  
 Del. quantity cm<sup>3</sup>/ : 21.3...21.5  
 100 s : (21.0...21.8)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)  
 2nd speed rpm : 250.0  
 Rack travel in mm : 5.7...5.9  
 Del. quantity cm<sup>3</sup>/ : 1.7...2.3  
 100 s : (1.4...2.6)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1050  
 Del. quantity : 213.0...215.0  
 1000 : (210.0...218.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 42...50

Testing:  
 1st rack travel in: 10.20  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00  
 Speed rpm : 1180...1210

3rd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 250  
Rack travel in mm : 5.70...5.40  
Rack travel in mm : 2.00  
Speed rpm : 350...410

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 450  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 250  
Rack travel in m: 12.40...13.00

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)  
Rack travel in mm : 19.50...21.00

Remarks:

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#### APPLICATION

Special-purpose vehicle

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 10,8 a2  
 Edition : 06.04.88  
 Replaces : -  
 Test oil : ISO-4113  
  
 Combination no. : 0 401 876 334  
  
 Injection pump  
 Pump designation : PE6P120A32ORS468  
 EP type number : 0 411 826 128  
 Governor  
 Governor design. : RSUV300...900P0A320-1  
 Governor no. : 0 421 829 107  
  
 Customer-spec. information  
 Customer : MWM  
  
 Engine : D-TBD 234 V6  
  
 1st version kW : 300.0  
 Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
  
 Overflow valve  
 : 1 417 413 025  
  
 Inlet press., bar : 1.50  
  
 Test nozzle holder  
 assembly : 1 688 901 019  
  
 Opening  
 pressure, bar : 207...210  
  
 Orifice plate  
 diameter mm : 0,8  
  
 Test lines : 1 680 750 067  
  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 6- 3- 2- 5- 4

Phasing : 0-90-120-210-240-330

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 750  
 -----  
 Rack travel in mm : 14.50...14.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 24.9...25.1  
 -----  
 100 s: (24.6...25.4)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----  
 2nd speed rpm : 300.0  
 Rack travel in mm : 5.5...5.7  
 Del. quantity cm<sup>3</sup>/ : 2.0...2.6  
 100 s: (1.7...2.9)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

## Governor spring pre-tension

Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Del. quantity : 249.0...251.0  
 1000 : (246.0...254.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Control lever  
 position degrees: 70...78

## Testing:

1st rack travel in: 13.50  
 Speed rpm : 940...950

2nd rack travel in: 4.00  
Speed rpm : 965...995  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 29...37  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1  
Speed rpm : 300  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 450  
Rack travel in m: 14.50...14.60  
3rd speed rpm : 280  
Rack travel in m: 15.70...16.30

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 13.50  
Speed rpm : 940...950

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,0 t2  
Edition : 5.5.88  
Replaces : 2.80  
Test oil : ISO-4113

Combination no. : 0 401 876 714

Injection pump  
Pump designation : PE6P110A72ORS3066  
EP type number : 0 411 816 716  
Governor  
Governor design. : RSV350...1100P1/462R  
Governor no. : 0 421 833 109

Customer-spec. information  
Customer : SCANIA

Engine : DS 11

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.30...3.40  
                  : (3.25...3.45)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
-----  
Rack travel in mm : 13.20...13.30  
-----  
Del. quantity cm<sup>3</sup>/ : 16.1...16.4  
-----  
100 s : (15.8...16.7)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s : (0.8)  
-----  
2nd speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del. quantity cm<sup>3</sup>/ : 1.0...1.4  
100 s : (-)  
Spread cm<sup>3</sup> : 0.2  
100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del. quantity : 161.0...164.0  
1000 : (158.0...167.0)  
Spread cm<sup>3</sup> : 4.0  
1000 : (8.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1350  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.00

Testing:  
Speed rpm : 100  
Minimum rack travel: 20.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 520...580

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 162.5...165.5  
1000 s: (159.5...168.5)  
Spread cm<sup>3</sup> : 6.0  
1000 s: (4.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...240.0  
1000 s: (-)  
Rack travel in mm : 20.0...21.0

#### HIGH IDLE

1st version  
Rack travel in mm : 5.50...5.70  
Spread cm<sup>3</sup> : 4.0  
1000 s: (7.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.60  
Del. quantity cm<sup>3</sup>/ : 10.0...14.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 2.0  
1000 s: (4.0)

#### Remarks:

Delivery-valve spring pre-tension =

A16

2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MB 11,0 d 1  
 Edition : 06.04.88  
 Replaces : 18.12.87  
 Test oil : ISO-4113

Combination no. : 0 401 876 739

Injection pump  
 Pump designation : PE6P110A32OLS3805-10  
 EP type number : 0 411 816 740  
 Governor  
 Governor design. : RSV650...1150P1A820-  
 3

Governer no. : 0 421 833 177

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 155.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 1180

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 13.7...13.9

100 s: (13.4...14.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 650.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1180

Del. quantity : 137.0...139.0

1000 : (134.5...141.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

**RATED SPEED**

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 11.50  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1240...1260  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 6.1

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 650  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 650...715

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 970  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 700  
Rack travel in m: 13.10...13.30

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 970  
Del. quantity cm<sup>3</sup>/ : 137.0...141.0  
1000 s: (134.0...144.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### Remarks:

:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

#### APPLICATION

Forage harvester



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : PEN 10,0 k  
 Edition : 12.02.88  
 Replaces : 7.11.86  
 Test oil : ISO-4113  
 Combination no. : 0 401 876 754  
 Injection pump  
 Pump designation : PE6P110A32ORS3152  
 EP type number : 0 411 816 746  
 Governor  
 Governor design. : RSV200...1100P1A515-1  
 Governor no. : 0 421 833 293

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TD100G

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27  
 Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700  
 -----  
 Rack travel in mm : 12.60...12.70  
 -----  
 Del. quantity cm<sup>3</sup>/ : 17.2...17.4  
 -----  
 100 s: (16.9...17.7)  
 -----  
 Spread cm<sup>3</sup> : 0.4  
 -----  
 100 s: (0.7)  
 -----  
 2nd speed rpm : 250.0  
 Rack travel in mm : 4.1...4.3  
 Del. quantity cm<sup>3</sup>/ : 1.9...2.3  
 100 s: (1.6...2.5)  
 Spread cm<sup>3</sup> : 0.4  
 100 s: (0.7)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : 5.25

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 700  
 Aneroid pressure h: 1000  
 Del. quantity : 172.0...174.0  
 1000 : (169.0...177.0)  
 Spread cm<sup>3</sup> : 4.00  
 1000 : (7.50)

**RATED SPEED**

1st version  
 Control lever  
 position degrees: 58...66

Testing:  
 1st rack travel in: 11.60  
 Speed rpm : 1120...1130  
 2nd rack travel in: 4.00  
 Speed rpm : 1170...1200  
 4th rack travel in: 1300

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 3.7

Speed rpm : 250

Rack travel in mm : 3.60...3.80

Rack travel in mm : 2.00

Speed rpm : 290...350

Aneroid/Altitude

Compensator Test

#### 1st version

Setting

Speed rpm : 500

Pressure hPa : 1000

Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 10.10...10.20

2nd pressure hPa : 580

Rack travel in m: 12.40...12.50

3rd pressure hPa : 270

Rack travel in m: 10.30...10.50

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -

Speed rpm : 700

Del. quantity cm<sup>3</sup>/ : 124.5...127.5

1000 s: (122.0...130.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1120...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 170.0...200.0

1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

#### LOW IDLE

A20

Speed rpm : 250

Rack travel in mm : 4.10...4.30

Del. quantity cm<sup>3</sup>/ : 19.0...23.0

1000 s: (16.5...25.5)

Spread cm<sup>3</sup> : 4.50

1000 s: (7.50)

Remarks:

:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,0 k 4  
Edition : 07.03.88  
Replaces : 18.9.87  
Test oil : ISO-4113  
  
Combination no. : 0 401 876 758  
  
Injection pump  
Pump designation : PE6P110A32OLS3814-11  
EP type number : 0 411 816 756  
Governor  
Governor design. : RSV350..750POA531  
Governor no. : 0 421 833 269

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM421

1st version kW : 116.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 13.9...14.1

100 s: (13.6...14.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.4...7.7

Del. quantity cm<sup>3</sup>/ : 1.3...1.9

100 s: (1.0...2.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 139.0...141.0

1000 : (136.5...143.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 22...30

Testing:

1st rack travel in: 12.10

Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 780...793  
4th rack travel in: 1350  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.5  
Speed rpm : 350  
Rack travel in mm : 7.40...7.70

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Before adjusting the full-load  
delivery, set control rod to 14.5...  
15.0 mm travel with full-load adjusting  
screw in governor cover. Full-load  
adjustment with adjusting screw on  
governor housing.  
Observe VDT-I-420/120

0

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 11,0 V  
 Edition : 07.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 401 876 763

Injection pump  
 Pump designation : PE6P120A32OLS3815-10  
 EP type number : 0 411 826 735  
 Governor  
 Governor design. : RSV650...1200PA820-  
 8  
 Governor no. : 0 421 833 292

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM421A

1st version kW : 184.0  
 Rated speed : 2400

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h; 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

A23

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-45-120-165-240-285  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 1230  
 -----  
 Rack travel in mm : 10.50...10.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 15.4...15.6  
 -----  
 100 s: (15.1...15.9)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 650.0  
 Rack travel in mm : 3.4...3.7  
 Del. quantity cm<sup>3</sup>/ : 1.8...2.4  
 100 s: (1.5...2.7)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1230  
 Del. quantity : 154.0...156.0  
 1000 : (151.0...159.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version

Control lever  
position degrees: 48...56

Testing:

1st rack travel in: 9.50  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1285...1315  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.5

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 3.40...3.70  
Rack travel in mm : 2.00  
Speed rpm : 655...715

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 900  
Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 162.0...166.0  
1000 s: (159.0...169.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 9.50  
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

Engine-speed difference between 1 mm  
regulated and control-rod travel 4 mm =  
25...35 1/min.

When adjusting and checking, adjust  
speed regulation to 1260...1270 l/min.  
Afterwards, readjust speed regulation  
to 1210...1220 l/min.

APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 14.4 a2  
Edition : 06.04.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 878 140

Injection pump  
Pump designation : PE8P120A520/SRS427  
EP type number : 0 411 828 048  
Governor  
Governor design. : RSUV300...900POA320-  
1  
Governor no. : 0 421 829 107

Customer-spec. information  
Customer : MWM

Engine : TBD 234 V8

1st version kW : 400.0  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

A25

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 8- 5- 4- 7- 2- 3-  
6

Phasing : 0-30-90-120-180-210-  
Phasing : 270-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 750  
-----  
Rack travel in mm : 14.50...14.60  
-----  
Del. quantity cm<sup>3</sup>/ : 24.9...25.1  
-----  
100 s: (24.6...25.4)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 5.5...5.7  
Del. quantity cm<sup>3</sup>/ : 2.0...2.6  
100 s: (1.7...2.9)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 750  
Del. quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 60...68

Testing:  
1st rack travel in: 13.50

Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 965...995  
4th rack travel in: 1130  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 69...77  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 320...380

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 14.50...14.60  
2nd speed rpm : 450  
Rack travel in m: 14.50...14.60  
3rd speed rpm : 280  
Rack travel in m: 15.70...16.30

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.50  
Speed rpm : 940...950

Remarks:

:

#### APPLICATION

Generator set



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MB 14,6 P 1  
 Edition : 11.12.87  
 Replaces : 7.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 401 878 703  
 Injection pump  
 Pump designation : PE8P120A32OLS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV650...1150POA823  
 Governor no. : 0 421 833 166

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 206.0  
 Rated speed : 2300  
 2nd version kW : 206.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 1180  
 -----

Rack travel in mm : 9.00...9.10  
 -----

Del. quantity cm<sup>3</sup>/ : 13.3...13.5  
 -----

100 s: (13.0...13.8)  
 -----

Spread cm<sup>3</sup> : 0.5  
 -----

100 s: (0.9)  
 -----

2nd speed rpm : 650.0  
 -----

Rack travel in mm : 3.4...3.6  
 -----

Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 -----

100 s: (1.3...2.5)  
 -----

Spread cm<sup>3</sup> : 0.8  
 -----

100 s: (1.2)  
 -----

1st speed rpm : 1180  
 -----

Rack travel in mm : 9.30...9.40  
 -----

Del. quantity cm<sup>3</sup>/ : 13.7...13.9  
 -----

100 s: (13.4...14.2)  
 -----

Spread cm<sup>3</sup> : 0.5  
 -----

100 s: (0.9)  
 -----

2nd speed rpm : 650  
 -----

Rack travel in mm : 3.40...3.60  
 -----

Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 -----

100 s: (1.3...2.5)  
 -----

Spread cm<sup>3</sup> : 0.8  
 -----

100 s: (1.2)  
 -----

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

#### FULL LOAD DELIV. AT FULL LOAD STOP

##### 1st version

Speed rpm : 1180  
Del. quantity : 133.0...135.0  
1000 : (130.0...138.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

##### 2nd version

Speed rpm : 1180  
Del. quantity cm<sup>3</sup>/ : 137.0...139.0  
1000 s : (134.0...142.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s : (9.00)

#### RATED SPEED

##### 1st version

Control lever  
position degrees: 42...50

##### Testing:

1st rack travel in: 8.00  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

##### 2nd version

Control lever  
position degrees: 42...50

##### Testing:

1st rack travel in: 8.30  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.6  
Speed rpm : 650  
Rack travel in mm : 3.50...3.70  
Rack travel in mm : 2.00  
Speed rpm : 655...695

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
Rack travel in m: 9.00...9.10  
2nd speed rpm : 975  
Rack travel in m: 9.80...10.00  
3rd speed rpm : 1075  
Rack travel in m: 9.30...9.50  
4th speed rpm : 700  
Rack travel in m: 9.80...10.00

Torque control curve - 2nd version

1st speed rpm : 1180  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 975  
Rack travel in m: 10.1...10.2  
3rd speed rpm : 1075  
Rack travel in m: 9.60...9.80  
4th speed rpm : 700  
Rack travel in m: 10.1...10.3

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 145.0...149.0  
1000 s : (142.0...152.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s : (12.0)

##### 2nd version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 154.0...158.0  
1000 s : (151.0...161.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s : (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.00  
Speed rpm : 1210...1220

##### 2nd version

1mm rack travel less than  
full load rack tr: 8.30  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s : (136.0...164.0)

Remarks:

:  
When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

Test specifications for version 1 apply to injection-pump assemblies on engines as of engine no. 422.901-410117069.

#### APPLICATION

Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 p 3  
Edition : 16.5.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 401 878 707

Injection pump  
Pump designation : PE8P120A32OLS3816-10  
EP type number : 0 411 828 715  
Governor  
Governor design. : RSV350...750POA824-3  
Governor no. : 0 421 833 229

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 227.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 700  
-----  
Rack travel in mm : 12.10...12.20  
-----  
Del. quantity cm<sup>3</sup>/ : 18.4...18.6  
-----  
100 s: (18.1...18.9)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 350.0  
Rack travel in mm : 4.8...5.0  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 2.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 700  
Del. quantity : 184.0...186.0  
1000 : (181.0...189.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 26...30

Testing:  
1st rack travel in: 11.10  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 780...793

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 4.9

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 4.80...5.00

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 975  
Rack travel in m: 10.10...10.20  
3rd speed rpm : 1075  
Rack travel in m: 9.60...9.80

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 8.30  
Speed rpm : 1210...1220

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

#### Remarks:

Observe VDT-I-420/120

0

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,6 p 5  
 Edition : 19.05.88  
 Replaces : 2.11.87  
 Test oil : ISO-4113

Combination no. : 0 401 878 711

Injection pump  
 Pump designation : PE8P120A32OLS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV650...1150POA823-5  
 Governor no. : 0 421 833 280

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : 0M422A

1st version kW : 206.0  
 Rated speed : 2300  
 2nd version kW : 206.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow quantity min. 1/h: 100...120

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)

Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 Firing order : 4- 1

Phasing : 0-45-90-135-180-225-270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1180  
 -----

Rack travel in mm : 9.30...9.40  
 -----

Del. quantity cm<sup>3</sup>/ : 13.3...13.5  
 -----  
 100 s: (13.0...13.8)  
 -----

Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 650.0  
 Rack travel in mm : 3.3...3.6  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1180  
 Del. quantity : 133.0...135.0  
 1000 : (130.0...138.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

2nd version

Speed rpm : 1180  
Del. quantity cm3/ : 148.0...150.0  
1000 s: (145.0...153.0)  
Spread cm3 : 5.00  
1000 s: (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 8.30  
Speed rpm : 1210...1220  
2nd rack travel in: 4.00  
Speed rpm : 1235...1255  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.4  
Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Rack travel in mm : 2.00  
Speed rpm : 655...695

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1180  
Rack travel in m: 9.30...9.40  
2nd speed rpm : 950  
Rack travel in m: 10.40...10.60  
3rd speed rpm : 1050  
Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm3/ : 160.0...164.0  
1000 s: (157.0...167.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

2nd version

Speed rpm : 975  
Del. quantity cm3/ : 159.0...163.0  
1000 s: (156.0...166.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BOS

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.30  
Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Del. quantity cm3/ : 16.0...22.0  
1000 s: (13.0...25.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

APPLICATION

Version 1 = Combine harvester  
Version 2 = Forage harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,6 s 2  
Edition : 25.03.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 401 878 712

Injection pump  
Pump designation : PE8P110A32OLS3802-10  
EP type number : 0 411 818 710  
Governor  
Governor design. : RSV650...1200POA820-7  
Governor no. : 0 421 833 288

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM422

1st version kW : 206.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

B06

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
Phasing : 270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 1230  
-----  
Rack travel in mm : 11.30...11.40  
-----  
Del. quantity cm<sup>3</sup>/ : 13.2...13.4  
-----  
100 s: (12.9...13.6)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 650.0  
Rack travel in mm : 5.1...5.4  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.4)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1230  
Del. quantity : 132.0...134.0  
1000 : (129.5...136.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48



Testing:

1st rack travel in: 10.30  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1285...1305  
4th rack travel in: 1400  
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 5.2

Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 650  
Rack travel in mm : 5.10...5.40  
Rack travel in mm : 2.00  
Speed rpm : 650...670

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1230  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 950  
Rack travel in m: 12.00...12.20  
3rd speed rpm : 1100  
Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
Del. quantity cm<sup>3</sup>/ : 134.0...138.0  
1000 s: (131.0...141.0)  
Spread cm<sup>3</sup> : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.30  
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

B07

Remarks:

:  
Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1260...1270 l/min. Afterwards, readjust speed regulation to 1210...1220 l/min.

APPLICATION  
Combine-harvester

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,6 p 7  
 Edition : 11.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 401 878 713  
 Injection pump  
 Pump designation : PE8P120A32QLS3816-10  
 EP type number : 0 411 828 715  
 Governor  
 Governor design. : RSV650...1200POA823-6  
 Governor no. : 0 421 833 289

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM422A

1st version kW : 228.0  
 Rated speed : 2400

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 1230

Rack travel in mm : 10.10...10.20

Del. quantity cm<sup>3</sup>/ : 14.4...14.6

100 s: (14.1...14.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 650.0

Rack travel in mm : 3.3...3.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1230

Del. quantity : 144.0...146.0

1000 : (141.0...149.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 9.10  
Speed rpm : 1260...1270  
2nd rack travel in: 4.00  
Speed rpm : 1285...1305  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 650  
Rack travel in mm : 3.4  
Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Rack travel in mm : 2.00  
Speed rpm : 655...695

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1230  
Rack travel in m: 10.10...10.20  
2nd speed rpm : 900  
Rack travel in m: 10.60...10.80  
3rd speed rpm : 1100  
Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 163.0...167.0  
1000 s: (160.0...170.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10  
Speed rpm : 1260...1270

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 650  
Rack travel in mm : 3.30...3.60  
Del. quantity cm<sup>3</sup>/ : 16.0...22.0  
1000 s: (13.0...25.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1260...1270 l/min. Afterwards, readjust speed regulation to 1210...1220 l/min.

APPLICATION

Combine-harvester

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 18,3 i 1  
Edition : 06.04.88  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 401 879 703

Injection pump  
Pump designation : PE10P110A320LS3818-1  
1  
EP type number : 0 411 819 706  
Governor  
Governor design. : RSV650...1150POA823-  
2  
Governor no. : 0 421 833 244

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 423

1st version kW : 238.0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 130...150

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

B10

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
: (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 10- 9- 4- 1- 8- 7  
- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-  
216-261-288-333  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 10

## BASIC SETTING

1st speed rpm : 1180  
-----  
Rack travel in mm : 10.90...11.00  
-----  
Del. quantity cm<sup>3</sup>/ : 11.3...11.5  
-----  
100 s: (11.0...11.7)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (0.8)  
-----

2nd speed rpm : 650.0  
Rack travel in mm : 5.7...5.9  
Del. quantity cm<sup>3</sup>/ : 1.2...2.0  
100 s: (0.9...2.2)  
Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1180  
Del. quantity : 113.0...115.0  
1000 : (110.5...117.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (8.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 36...44

Testing:

1st rack travel in: 10.00  
 Speed rpm : 1210...1220  
 2nd rack travel in: 4.00  
 Speed rpm : 1235...1250  
 4th rack travel in: 1300  
 Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
 position degrees: 21...29  
 Setting point w/out bumper spring  
 Speed rpm : 650  
 Rack travel in mm : 5.7

Testing:

Speed rpm : 100  
 Minimum rack travel: 19.50  
 Speed rpm : 650  
 Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180  
 Rack travel in m: 10.80...11.00  
 2nd speed rpm : 1075  
 Rack travel in m: 11.70...11.90  
 3rd speed rpm : 950  
 Rack travel in m: 12.40...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 950  
 Del. quantity cm<sup>3</sup>/ : 127.0...131.0  
 1000 s: (124.0...134.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than  
 full load rack tr: 10.00  
 Speed rpm : 1210...1220

STARTING FUEL DELIVERY

Speed rpm : 100  
 Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
 1000 s: (126.0...154.0)

Remarks:

:  
 Engine-speed difference between 1 mm regulated and control-rod travel 4 mm = 25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 l/min. Afterwards, readjust speed regulation to 1160...1170 l/min.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 9,7 e  
Edition : 29.04.88  
Replaces : 3.4.87  
Test oil : ISO-4113

Combination no. : 0 401 886 701

Injection pump  
Pump designation : PE6P110A721RS3101  
EP type number : 0 411 816 725  
Governor  
Governor design. : RSV400...1200P1A527  
Governor no. : 0 421 833 259

Customer-spec. information  
Customer : STEYR

Engine : WD615.85/87

1st version kW : 206.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 17.2...17.4

100 s: (16.9...17.7)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.2...5.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.75

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 1200

Del. quantity : 172.0...174.0

1000 : (169.0...177.0)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 64...72

Testing:

1st rack travel in: 11.00

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1285...1315  
3rd rack travel in: 4.00  
Speed rpm : 1295...1325  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 26...34  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 400  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 520...580

#### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 700  
Rack travel in m: 12.60...12.70  
4th speed rpm : 1120  
Rack travel in m: 12.20...12.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.60...12.70

#### Measurement

Speed 1/min : 500  
1st pressure hPa : -  
Rack travel in m: 8.70...8.90  
2nd pressure hPa : 660  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 320  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 178.0...184.0  
1000 s: (175.0...187.0)  
Aneroid pressure h: -

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 104.0...108.0  
1000 s: (101.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...170.0

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a11  
Edition : 11.03.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 048  
Injection pump  
Pump designation : PES6P120A720/3LS470-  
3  
EP type number : 0 412 026 051  
Governor  
Governor design. : RQV250...1100PA707  
Governor no. : 0 421 813 440

Customer-spec. information  
Customer : MAN

Engine : D2866KUL

1st version kW : 265.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY  
Test pressure, bar : 30...32

Prestroke mm : 2.80...2.90  
: (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 23.0...23.2

100 s: (22.7...23.5)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 5.4...5.6

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.30

2nd speed rpm : 450

travel mm : 3.00...3.40

3rd speed rpm : 850

travel mm : 5.10...5.50

4th speed rpm : 1100

travel mm : 7.20...7.40

## GUIDE SLEEVE POSITION

Speed rpm : 1130

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h: 1000

Del. quantity : 230.0...232.0

1000 : (227.0...235.0)



Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 49...57

#### Testing:

1st rack travel in: 10.90  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1235...1265  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 12...20

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.00  
Speed rpm : 250  
Rack travel in mm : 5.40...5.60

#### CONSTANT REGULATION

Speed rpm : 285...400

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 1100  
Rack travel in m: 11.90...12.00  
3rd speed rpm : 935  
Rack travel in m: 12.50...12.70  
4th speed rpm : 1010  
Rack travel in m: 12.00...12.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.70...12.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 130  
Rack travel in m: 9.90...10.10  
3rd pressure hPa : 400

B15

Rack travel in m: 11.10...11.50

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 218.0...224.0  
1000 s: (215.0...227.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 231.0...237.0  
1000 s: (228.0...240.0)  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 179.0...191.0  
1000 s: (176.0...194.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 128.0...130.0  
1000 s: (125.0...133.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 10.90  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 225.0...245.0  
1000 s: (225.0...245.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.40...5.60  
Del.quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a14  
Edition : 20.05.88  
Replaces : 4.86  
Test oil : ISO-4113

Combination no. : 0 402 036 055

Injection pump  
Pump designation : PES6P120A720/3LS470-  
2

EP type number : 0 412 026 050  
Governor  
Governor design. : RQ300/1100PA658-21  
Governor no. : 0 421 801 342

Customer-spec. information  
Customer : MAN

Engine : D2866LUH

1st version kW : 243.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

B16

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 20.5...20.7

100 s : (20.2...21.0)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.7...4.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s : (0.9...2.1)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

Aneroid pressure h : 1000

Del. quantity : 205.0...207.0

1000 : (202.0...210.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.10  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.30  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.20  
Torque control curve - 1st version  
1st speed rpm : 750  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 1100  
Rack travel in m: 11.10...11.20  
3rd speed rpm : 925  
Rack travel in m: 11.30...11.40

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 11.30...11.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.60...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 520  
Rack travel in m: 11.10...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100

Del. quantity cm<sup>3</sup>/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Aneroid pressure h: 520  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 190.0...198.0  
1000 s: (187.0...201.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

: MAN-NR. 2-7711

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 g6  
 Edition : 11.12.87  
 Replaces : 7.12.87  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 064  
 Injection pump  
 Pump designation : PES6P110A720/3LS477-  
 2  
 EP type number : 0 412 016 071  
 Governor  
 Governor design. : RQ250/1100PA817-1  
 Governor no. : 0 421 801 362

Customer-spec. information  
 Customer : MAN

Engine : D2566UH/205

1st version kW : 150.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar : 25...27

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)

Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 10.50...10.60

Del. quantity cm<sup>3</sup>/ : 9.1...9.4

100 s : (8.8...9.6)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 250.0

Rack travel in mm : 6.1...6.3

Del. quantity cm<sup>3</sup>/ : 1.5...2.0

100 s : (1.2...2.2)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del. quantity : 91.0...94.0

1000 : (88.5...96.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in : 9.50

Speed rpm : 1145...1160

2nd rack travel in : 4.00

Speed rpm : 1215...1245

4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.70  
Speed rpm : 250  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 330...370

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 10.50...10.60  
2nd speed rpm : 500  
Rack travel in m: 10.50...10.70

#### START CUT-OUT

Speed 1/min : 170 (190)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1100  
Del.quantity cm3/ : 101.0...109.0  
1000 s: (98.0...112.0)  
Speed rpm : 500  
Del.quantity cm3/ : 77.0...85.0  
1000 s: (74.0...88.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 110.0...130.0  
1000 s: (106.0...134.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.10...6.30  
Del.quantity cm3/ : 15.0...20.0  
1000 s: (12.5...22.5)

Spread cm3 : 4.50  
1000 s: (7.50)

Remarks: : MAN-NR. 2-7768

APPLICATION  
Omnibus

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MAN 11,9a33  
 Edition : 06.04.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 074  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1100PA658-24  
 Governor no. : 0 421 801 437

Customer-spec. information  
 Customer : MAN

Engine : D2866K0H  
 1st version kW : 265.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

B20

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 750  
 -----  
 Rack travel in mm : 12.20...12.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 22.8...23.0  
 -----  
 100 s: (22.5...23.3)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----  
 2nd speed rpm : 300.0  
 Rack travel in mm : 5.2...5.4  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s: (0.9...2.1)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: 108  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del. quantity : 228.0...230.0  
 1000 : (225.0...233.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.20  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 350...390

#### TORQUE CONTROL

Dimension a mm : 0.55  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 750  
Rack travel in m: 12.70...12.90  
3rd speed rpm : 920  
Rack travel in m: 12.40...12.60  
4th speed rpm : 985  
Rack travel in m: 11.60...11.90

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 12.20...12.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.10...9.20  
2nd pressure hPa : 80  
Rack travel in m: 9.40...9.50  
3rd pressure hPa : 400  
Rack travel in m: 11.00...11.40

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

B21

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 210.0...214.0  
1000 s: (207.0...217.0)  
Aneroid pressure h: 1000  
Speed rpm : 650  
Del.quantity cm3/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Speed rpm : 500  
Del.quantity cm3/ : 188.0...200.0  
1000 s: (185.0...203.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 225.0...245.0  
1000 s: (221.0...249.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MAN 11,9a34  
 Edition : 06.04.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 036 075  
 Injection pump  
 Pump designation : PES6P120A720/3LS470-  
 2  
 EP type number : 0 412 026 050  
 Governor  
 Governor design. : RQ300/1100PA813-5  
 Governor no. : 0 421 801 434

## Customer-spec. information

Customer : MAN  
 Engine : D2866TUH

1st version kW : 213.0  
 Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

B22

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 750  
 Rack travel in mm : 10.80...10.90  
 Del. quantity cm<sup>3</sup>/ : 18.5...18.7  
 100 s : (18.2...19.0)  
 Spread cm<sup>3</sup> : 0.5  
 100 s : (0.9)

2nd speed rpm : 300.0  
 Rack travel in mm : 5.2...5.4  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.8  
 100 s : (0.9...2.1)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2  
 Speed rpm : 750  
 Rack travel in mm : 14.70...16.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 750  
 Aneroid pressure h: 1000  
 Del. quantity : 185.0...187.0  
 1000 : (182.0...190.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

## RATED SPEED

1st version  
 Setting point:  
 Speed rpm : 750  
 Rack travel in mm : 15.5

Testing:



1st rack travel in: 9.80  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 6.80  
Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Rack travel in mm : 2.00  
Speed rpm : 390...430

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 750  
Rack travel in m: 11.00...11.20

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 10.80...10.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.50...8.70  
2nd pressure hPa : 190  
Rack travel in m: 8.80...8.90  
3rd pressure hPa : 350  
Rack travel in m: 9.80...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del.quantity cm3/ : 190.0...196.0  
1000 s: (187.0...199.0)  
Aneroid pressure h: 350

Speed rpm : 500  
Del.quantity cm3/ : 164.0...176.0  
1000 s: (161.0...179.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 9.80  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 205.0...225.0  
1000 s: (201.0...229.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.20...5.40  
Del.quantity cm3/ : 12.0...18.0  
1000 s: (9.0...21.0)  
Spread cm3 : 8.00  
1000 s: (12.00)

Remarks:

:

#### APPLICATION Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 j  
Edition : 16.05.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 036 726  
Injection pump  
Pump designation : PES6P120A720LS3205  
EP type number : 0 412 025 729  
Governor  
Governor design. : RQ300/1100PA813-2  
Governor no. : 0 421 801 416

Customer-spec. information  
Customer : MAN

Engine : D2866LX

1st version kW : 265.0  
Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1,50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 22.8...23.0

100 s : (22.5...23.3)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.1...4.3

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s : (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000

Del. quantity : 228.0...230.0

1000 : (225.0...233.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 650

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.10

Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
3rd rack travel in: 4.00  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 4.2

#### Testing:

Speed rpm : 100  
Minimum rack trave: 5.70  
Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.00  
Speed rpm : 345...385

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 13.10...13.20  
2nd speed rpm : 700  
Rack travel in m: 13.70...13.90

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.10...13.20

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 150  
Rack travel in m: 9.80...10.00  
3rd pressure hPa : 510  
Rack travel in m: 11.60...12.00

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 1100  
Del. quantity cm<sup>3</sup>/ : 227.0...231.0  
1000 s: (224.0...234.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1145...1160

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.10...4.30  
Del. quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : ALO 13,8 b2  
 Edition : 15.5.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 158  
 Injection pump  
 Pump designation : PES6P120A32ORS354  
 Governor  
 Governor design. : RQV300...875PA361KR

Customer-spec. information  
 Customer : ALLIS CHALMERS

Engine : 16.000-25.000

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
 x Wall thickness  
 x Length mm : 8,00x2,00x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)

Rack travel in mm : 12.00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 26.5...27.1

100 s : (-)

Spread cm<sup>3</sup> : 0.3

100 s : (-)

2nd speed rpm : 300

Rack travel in mm : 3.40...3.60

Del. quantity cm<sup>3</sup>/ : 1.8...2.4

100 s : (-)

Spread cm<sup>3</sup> : -

100 s : (-)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 925

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 875

Del. quantity : 161.0...163.0

1000 : (159.0...164.0)

Spread cm<sup>3</sup> : 3.0

1000 : (-)

**RATED SPEED**

1st version

Control lever  
 position degrees: 62...70

Testing:

1st rack travel in: 15.00

Speed rpm : 915...925

2nd rack travel in: 3.50

Speed rpm : 975...1005

4th rack travel in: 1060

Speed rpm : 0.00...1.00

**LOW IDLE 1**

Control lever  
 position degrees: 6...14

Testing:

Speed rpm : 100  
Minimum rack trave: 8.00  
Speed rpm : 250  
Rack travel in mm : 3.80...6.00  
Rack travel in mm : 1.85  
Speed rpm : 385...415  
Speed rpm : 550  
Maximum rack trave: 0.30

#### TORQUE CONTROL

Dimension a mm : -  
Torque control curve - 1st version  
1st speed rpm : 875  
Rack travel in m: 8.70...8.80  
2nd speed rpm : 600  
Rack travel in m: 8.75...8.85

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del.quantity cm3/ : 141.0...145.0  
1000 s: (139.0...147.0)  
Spread cm3 : -  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 7.70  
Speed rpm : 915...925

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...170.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 300  
Del.quantity cm3/ : 18...24  
1000 s: (-)

#### Remarks:

: ALLIS-CHALMERS NO.  
: 4 395 449

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : MB 11,4 119  
 Edition : 19.5.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 299  
 Injection pump  
 Pump designation : PES6P110A820LS442  
 EP type number : 0 412 016 060  
 Governor  
 Governor design. : RQ250/950PA483-3  
 Governor no. : 0 421 801 363

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM407

1st version kW : 147.0  
 Rated speed : 1900

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.5(0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 950

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 11.0...11.2

100 s : (10.7...11.5)

Spread cm<sup>3</sup> : 0.4

100 s : (0.8)

2nd speed rpm : 250

Rack travel in mm : 8.40...8.60

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s : (1.1...2.2)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 950

Del. quantity : 110.0...112.0

1000 : (107.0...115.0)

Spread cm<sup>3</sup> : 4.0

1000 : (8.0)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.40

Speed rpm : 995...1010

2nd rack travel in: 4.00

Speed rpm : 1040...1070

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250

Rack travel in mm : 8.1

Testing:

Speed rpm : 100

Minimum rack trave: 9.70

Speed rpm : 250

Rack travel in mm : 8.00....8.20

Rack travel in mm : 2.00

Speed rpm : 330...370

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 97.0...101.0

1000 s: (94.0...104.0)

Spread cm3 : 6.0

1000 s: (9.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 a 7  
Edition : 19.05.88  
Replaces : 7.11.86  
Test oil : ISO-4113

Combination no. : 0 402 046 330

Injection pump  
Pump designation : PES6P120A320RS419-2  
EP type number : 0 412 026 048  
Governor  
Governor design. : RQ275/1050PA844  
Governor no. : 0 421 801 379

Customer-spec. information  
Customer : RVI

Engine : MIPS062045B

1st version kW : 176.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
                  : (2.75...2.95)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10.00...11.00  
& maximum rack tra: 21.00  
Difference ° CS : ?

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 9.20...9.30

Del. quantity cm<sup>3</sup>/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm<sup>3</sup> : 0,5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 5.5...5.7

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600



Rack travel in mm : 20.0

Testing:

1st rack travel in: 8.20  
Speed rpm : 1110...1120  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 3.6

Testing:

Speed rpm : 200  
Minimum rack travel: 5.50  
Speed rpm : 275  
Rack travel in mm : 3.50...3.70  
Rack travel in mm : 2.00  
Speed rpm : 300...340

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 700  
Rack travel in m: 9.70...9.90

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.20...8.30  
2nd pressure hPa : 260  
Rack travel in m: 8.90...9.00  
3rd pressure hPa : 230  
Rack travel in m: 8.40...8.60

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 700

C03

Del. quantity cm<sup>3</sup>/ : 149.0...155.0  
1000 s: (146.0...158.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 103.0...105.0  
1000 s: (100.0...108.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 8.20  
Speed rpm : 1110...1120

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 3.50...3.70

Remarks:

:

Start-of-delivery mark 9.5<sup>o</sup> cam angle  
after start of delivery cyl. 1

APPLICATION  
Omnibus

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : RVI 9,8 a 8  
 Edition : 19.05.88  
 Replaces : 11.12.87  
 Test oil : ISO-4113

Combination no. : 0 402 046 332

Injection pump  
 Pump designation : PES6P120A32ORS419  
 EP type number : 0 412 026 037  
 Governor  
 Governor design. : RQ275/1050PA844-1  
 Governor no. : 0 421 801 421

Customer-spec. information

Customer : RVI

Engine : MIPRO62045A

1st version kW : 210.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1050  
 -----  
 Rack travel in mm : 10.10...10.20  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.5...18.7  
 -----  
 100 s : (18.2...19.0)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s : (0.9)  
 -----

2nd speed rpm : 275.0  
 Rack travel in mm : 5.8...6.0  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s : (1.2...2.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s : (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1050  
 Aneroid pressure h: 700  
 Del. quantity : 185.0...187.0  
 1000 : (182.0...190.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600  
 Rack travel in mm : 20.0

Testing:  
 1st rack travel in: 9.10  
 Speed rpm : 1110...1120  
 2nd rack travel in: 4.30

Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 4.2

#### Testing:

Speed rpm : 200  
Minimum rack travel: 5.90  
Speed rpm : 275  
Rack travel in mm : 4.10...4.30  
Rack travel in mm : 2.30  
Speed rpm : 310...350

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 10.10...10.20

##### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.10  
2nd pressure hPa : 360  
Rack travel in m: 9.60...9.70  
3rd pressure hPa : 160  
Rack travel in m: 8.60...8.80

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 168.0...174.0  
1000 s: (165.0...177.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 105.0...107.0  
1000 s: (102.0...110.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

COS

full load rack tr: 9.10  
Speed rpm : 1110...1120

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.10...4.30

Remarks:

:

Start-of-delivery mark 9.5° cam angle  
after start of delivery cyl. 1

APPLICATION  
Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 9,8 d  
Edition : 07.03.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 046 333

Injection pump  
Pump designation : PES6P120A320RS514  
EP type number : 0 412 026 052  
Governor  
Governor design. : RQV375...900PA885  
Governor no. : 0 421 813 689

Customer-spec. information  
Customer : RVI

Engine : MIDRO62045

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00

C06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.90...13.00

Del. quantity cm<sup>3</sup>/ : 21.2...21.4

100 s : (20.9...21.7)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 7.4...7.6

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 350  
travel mm : 1.00...1.20

2nd speed rpm : 500  
travel mm : 3.00...3.40

3rd speed rpm : 750  
travel mm : 5.90...6.30

4th speed rpm : 900  
travel mm : 7.70...7.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 930

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del. quantity : 212.0...214.0

1000 : (209.0...217.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 11.90  
Speed rpm : 940...950  
2nd rack travel in: 4.00  
Speed rpm : 1010...1040  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 68...76

Testing:  
Speed rpm : 200  
Minimum rack trave: 6.90  
Speed rpm : 375  
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION  
Speed rpm : 420...590

#### START CUT-OUT

Speed 1/min : 295 (315)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

speed rpm : 375  
Rack travel in mm : 5.30...5.50  
Del. quantity cm<sup>3</sup>/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:  
: BAUDOIN

APPLICATION  
Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 M
Edition : 19.05.88
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 046 334
Injection pump
Pump designation : PES6P120A32ORS515
EP type number : 0 412 026 053
Governor
Governor design. : RQV300...1150PA527K
Governor no. : 0 421 815 164

Customer-spec. information
Customer : RVI

Engine : MIDR 062030B

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 019
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 067
Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 2.80...2.90
: (2.75...2.95)
Rack travel in mm : 9.00...12.00

C08

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10.00...11.00
& maximum rack tra: 21.00
Difference ° CS : ?

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 10.20...10.30
Del.quantity cm3/ : 14.3...14.5
100 s: (14.0...14.8)
Spread cm3 : 0.5
100 s: (0.9)
2nd speed rpm : 600.0
Rack travel in mm : 5.4...5.6
Del.quantity cm3/ : 1.8...2.4
100 s: (1.5...2.7)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.70...2.10
2nd speed rpm : 900
travel mm : 5.80...6.20
3rd speed rpm : 1150
travel mm : 7.40...7.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1225
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Del.quantity : 143.0...145.0
1000 : (140.0...148.0)
Spread cm3 : 5.00
1000 : (9.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 57...65

### Testing:

1st rack travel in: 9.20  
Speed rpm : 1235...1245  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300

### Testing:

Speed rpm : 200  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 4.70...4.90

## CONSTANT REGULATION

Speed rpm : 320...440

## TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 9.20...9.30  
3rd speed rpm : 500  
Rack travel in m: 8.60...8.80  
4th speed rpm : 350  
Rack travel in m: 8.50...8.80

## START CUT-OUT

Speed 1/min : 220 (240)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 119.0...125.0  
1000 s: (116.0...128.0)  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 67.0...73.0  
1000 s: (64.0...76.0)

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.20  
Speed rpm : 1235...1245

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

## LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 13.0...19.0  
1000 s: (10.0...22.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

## Remarks:

:  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 m 1  
Edition : 12.02.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 046 335

Injection pump  
Pump designation : PES6P120A32ORS515  
EP type number : 0 412 026 053  
Governor  
Governor design. : RQV300...1150PA527-2K  
Governor no. : 0 421 815 188

Customer-spec. information  
Customer : RVI

Engine : MIDR062030C

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

outside diameter  
x Wall thickness  
x Length mm : 6.00x1,50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
: (2.75...2.95)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1150  
-----  
Rack travel in mm : 10.20...10.30  
-----  
Del. quantity cm<sup>3</sup>/ : 14.3...14.5  
-----  
100 s : (14.0...14.8)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s : (0.9)  
-----  
2nd speed rpm : 600.0  
Rack travel in mm : 4.6...4.8  
Del. quantity cm<sup>3</sup>/ : 1.8...2.4  
100 s : (1.5...2.7)  
Spread cm<sup>3</sup> : 0.8  
100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.70...2.10  
2nd speed rpm : 900  
travel mm : 5.80...6.20  
3rd speed rpm : 1150  
travel mm : 7.40...7.60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1225  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1150  
Del. quantity : 143.0...145.0  
1000 : (140.0...148.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version



Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 9.20  
Speed rpm : 1235...1245  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.20  
Speed rpm : 300  
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION  
Speed rpm : 320...440

TORQUE CONTROL  
Dimension a mm : 1.40  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 10.20...10.30  
2nd speed rpm : 750  
Rack travel in m: 9.20...9.30  
3rd speed rpm : 500  
Rack travel in m: 8.60...8.80  
4th speed rpm : 350  
Rack travel in m: 8.40...8.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 119.0...125.0  
1000 s: (116.0...128.0)  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 67.0...73.0  
1000 s: (64.0...76.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 9.20  
Speed rpm : 1235...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (131.0...159.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 4.40...4.60  
Del. quantity cm<sup>3</sup>/ : 13.0...19.0  
1000 s: (10.0...22.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Start-of-delivery mark 6° cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : RVI 6,2 b 1  
 Edition : 19.05.88  
 Replaces : 22.1.88  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 788  
 Injection pump  
 Pump designation : PES6P110A32ORS3190  
 EP type number : 0 412 016 720  
 Governor  
 Governor design. : RQV275...1175PA833-3  
 Governor no. : 0 421 813 656

Customer-spec. information  
 Customer : RVI

Engine : MIDR 060226D

1st version kW : 151.0  
 Rated speed : 2350

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30  
 : (4.15...4.35)  
 Rack travel in mm : 18.00...21.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BEGINNING OF DELIVERY DIFFERENCE**

betw. rack trav. m: 4.50...5.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 4.00...6.00

**BASIC SETTING**

1st speed rpm : 1175

Rack travel in mm : 13.40...13.50

Del. quantity cm<sup>3</sup>/ : 11.6...11.9

100 s: (11.3...12.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0  
 Rack travel in mm : 8.6...8.8  
 Del. quantity cm<sup>3</sup>/ : 2.7...3.2

100 s: (2.4...3.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250  
 travel mm : 0.90...1.10

2nd speed rpm : 450  
 travel mm : 3.40...3.80

3rd speed rpm : 800  
 travel mm : 5.10...5.50

4th speed rpm : 1175  
 travel mm : 7.20...7.50

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1330

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1175

Aneroid pressure h: 1000  
Del. quantity : 116.0...119.0  
1000 : (113.5...121.5)  
Spread cm<sup>3</sup> : 4.00  
1000 : (7.50)

#### RATED SPEED

1st version  
Control lever  
position degrees: 52...60

Testing:  
1st rack travel in: 12.40  
Speed rpm : 1245...1255  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.00  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION  
Speed rpm : 250...320

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.40...13.50

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 400  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 160  
Rack travel in m: 10.80...11.20

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1000  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 111.5...116.5  
1000 s: (108.5...119.5)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 47.5...50.5  
1000 s: (45.0...53.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.40  
Speed rpm : 1245...1255

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 90.0...110.0  
1000 s: (86.0...114.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 27.0...32.0  
1000 s: (24.5...34.5)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : UNI 9,5 c  
Edition : 11.03.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 046 790  
Injection pump  
Pump designation : PES6P110A72ORS3140  
EP type number : 0 412 016 716  
Governor  
Governor design. : RQ310/1025PA872  
Governor no. : 0 421 801 413

Customer-spec. information  
Customer : IVECO-UNIC

Engine : 8460.21.611

1st version kW : 162.0  
Rated speed : 2050

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.20...3.30  
: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1025

Rack travel in mm : 10.70...10.80

Del. quantity cm<sup>3</sup>/ : 12.7...13.0

100 s : (12.4...13.2)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 310.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 2.2...2.7

100 s : (1.9...2.9)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1025

Aneroid pressure h : 700

Del. quantity : 127.0...130.0

1000 : (124.5...132.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in : 9.70

Speed rpm : 1070...1085

2nd rack travel in : 4.00

Speed rpm : 1120...1150

4th rack travel in : 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 310

Rack travel in mm : 6.9

Testing:

Speed rpm : 100

Minimum rack trave: 8.40

Speed rpm : 310

Rack travel in mm : 6.80...7.00

Rack travel in mm : 2.00

Speed rpm : 380...420

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 700

Rack travel mm : 10.70...10.80

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 210

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500

Del. quantity cm3/ : 105.0...108.0

1000 s: (102.5...110.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

Speed rpm : 1070...1085

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

;

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

Omnibus

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 12,0 f2  
Edition : 20.05.88  
Replaces : 5.2.88  
Test oil : ISO-4113  
  
Combination no. : 0 402 046 791  
  
Injection pump  
Pump designation : PES6P120A32ORS3139  
EP type number : 0 412 026 718  
Governor  
Governor design. : RQV275...950PA728-4  
Governor no. : 0 421 813 678

Customer-spec. information  
Customer : RVI

Engine : MIDR 063540 H

1st version kW : 264,0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.50...3.60  
                  : (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 10.00...11.00  
& maximum rack tra: 21.00  
Difference ° CS : ?

## BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.30...13.40

Del. quantity cm<sup>3</sup>/ : 24.9...25.1

100 s : (24.6...25.4)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 7.5...7.7

Del. quantity cm<sup>3</sup>/ : 2.2...2.8

100 s : (1.9...3.1)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.20

2nd speed rpm : 450

travel mm : 3.30...3.80

3rd speed rpm : 800

travel mm : 5.80...6.00

4th speed rpm : 950

travel mm : 6.80...6.90

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950  
Aneroid pressure h: 1000  
Del.quantity : 249.0...251.0  
1000 : (246.0...254.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 58...66

#### Testing:

1st rack travel in: 12.30  
Speed rpm : 1015...1025  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.40  
Speed rpm : 275  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 295...400

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1000  
Rack travel mm : 13.30...13.40

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.60  
2nd pressure hPa : 660  
Rack travel in m: 12.60...12.70  
3rd pressure hPa : 200  
Rack travel in m: 10.30...10.50

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 255.0...261.0  
1000 s: (252.0...264.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 119.0...123.0  
1000 s: (116.0...126.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1015...1025

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 5.60...5.80  
Del.quantity cm<sup>3</sup>/ : 22.0...28.0  
1000 s: (19.0...31.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:  
Start-of-delivery mark 9° cam angle  
after start of delivery cyl. 1.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 11,4 i13  
 Edition : 25.03.88  
 Replaces : 26.2.88  
 Test oil : ISO-4113

Combination no. : 0 402 046 795

Injection pump  
 Pump designation : PES6P120A820LS3077-1  
 1  
 EP type number : 0 412 026 730  
 Governor  
 Governor design. : RQ300/1100PA606-2  
 Governor no. : 0 421 801 249

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM407A

1st version kW : 206.0  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance : - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1100

Aneroid pressure h: 700

Del. quantity : 165.0...167.0

1000 : (162.0...170.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Setting point:

Speed rpm : 650



Rack travel in mm : 20.0

Testing:

1st rack travel in: 10.00  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.1

Testing:

Speed rpm : 100  
Minimum rack travel: 6.50  
Speed rpm : 300  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : ?  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 920  
Rack travel in m: 11.20...11.40  
3rd speed rpm : 850  
Rack travel in m: 11.60...11.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.40...10.60

Measurement

Speed 1/min : 500  
1st pressure hPa : 280  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 350  
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 178.5...181.5  
1000 s : (175.5...184.5)  
Spread cm<sup>3</sup> : 8.00  
1000 s : (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s : (141.0...149.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s : (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s : (146.0...174.0)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : UNI 9,5 d  
 Edition : 07.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 046 796  
 Injection pump  
 Pump designation : PES6P110A720RS3140  
 EP type number : 0 412 016 716  
 Governor  
 Governor design. : RQV275...1150PAS01-5  
 Governor no. : 0 421 813 694

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8460.21.010

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness : 6.00x1.50x600  
 x Length mm

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30  
 : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1150

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 13.8...14.1

100 s: (13.5...14.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 275.0

Rack travel in mm : 6.8...7.0

Del. quantity cm<sup>3</sup>/ : 2.2...2.7

100 s: (1.9...2.9)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 250  
 travel mm : 1.00...1.20

2nd speed rpm : 400  
 travel mm : 2.70...3.00

3rd speed rpm : 850  
 travel mm : 5.00...5.20

4th speed rpm : 1150  
 travel mm : 7.30...7.50

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1260

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

**1st version**

Speed rpm : 1150

Aneroid pressure h: 700

Del. quantity : 138.0...141.0

1000 : (135.5...143.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

**RATED SPEED**

**1st version**

Control lever

position degrees: 60...68

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1275...1305  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 11...19

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.40  
Speed rpm : 275  
Rack travel in mm : 6.80...7.00

CONSTANT REGULATION  
Speed rpm : 275...520

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.10  
2nd pressure hPa : 240  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 210  
Rack travel in m: 10.20...10.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 105.0...108.0  
1000 s: (102.5...110.5)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : RVI 14,9 a  
 Edition : 13.05.87  
 Replaces : 7.83  
 Test oil : ISO-4113  
 Combination no. : 0 402 048 038  
 Injection pump  
 Pump designation : PES8P120A32ORS437  
 EP type number : 0 412 028 021  
 Governor  
 Governor design. : RQ750PA596  
 Governor no. : 0 421 801 149

Customer-spec. information  
 Customer : RVI

Engine : MIVS (R) 083530

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 067  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000  
 (A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27  
 Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00

C22

Firing order : 1- 8- 4- 2- 7- 3-  
 6- 5

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

**BASIC SETTING**

1st speed rpm : 700  
 -----  
 Rack travel in mm : 13.10...13.20  
 -----  
 Del. quantity cm<sup>3</sup>/ : 26.7...26.9  
 -----  
 100 s: (26.4...27.2)  
 -----  
 Spread cm<sup>3</sup> : 0,5  
 -----  
 100 s: (0.9)  
 -----  
 2nd speed rpm : 250.0  
 Rack travel in mm : 5.0...5.2  
 Del. quantity cm<sup>3</sup>/ : 1.5...2.1  
 100 s: (1.2...2.4)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 700  
 Del. quantity : 267.0...269.0  
 1000 : (264.0...272.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Testing:  
 1st rack travel in: 12.10  
 Speed rpm : 750...755  
 2nd rack travel in: 4.00  
 Speed rpm : 776...789  
 4th rack travel in: 900  
 Speed rpm : 0.00...1.00

**BREAKAWAY**

1st version  
 1mm rack travel less than  
 full load rack tr: 12.10

Speed rpm : 750...755

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 l 1  
Edition : 16.5.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 039  
Injection pump  
Pump designation : PES6P110A720RS305  
Governor  
Governor design. : RSV400...1100P2/434  
DR

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2,75...2,85  
: (2,70...2,90)

Rack travel in mm : 11,50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
-----  
Rack travel in mm : 11.50...11.60  
-----  
Del. quantity cm<sup>3</sup>/ : 14.9...15.1  
-----  
100 s : (14.7...15.3)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s : (-)  
-----

2nd speed rpm : 400  
Rack travel in mm : 6.10...6.30  
Del. quantity cm<sup>3</sup>/ : 1.4...2.0  
100 s : (-)  
Spread cm<sup>3</sup> : -  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.40

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h : 800  
Del. quantity : 149,0...151,0  
1000 : (147,0...153,0)  
Spread cm<sup>3</sup> : 4,0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 10.50  
Speed rpm : 1145...1155  
2nd rack travel in: 6.00  
Speed rpm : 1185...1215

## LOW IDLE 1

Control lever  
position degrees: 17...25

Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 6.20

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 570...630

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 550  
Pressure hPa : 180  
Rack travel mm : MIN.

Measurement

Speed 1/min : 550

1st pressure hPa : 850  
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 800  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 154.0...157.0  
1000 s: (152.0...159.0)

Spread cm<sup>3</sup> : -  
1000 s: (-)

Aneroid pressure h: -  
Speed rpm : 550  
Del. quantity cm<sup>3</sup>/ : 88.0...96.0  
1000 s: (86.0...98.0)

Spread cm<sup>3</sup> : -  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (-)

C25

HIGH IDLE

1st version

Speed rpm : 1200  
Del. quantity cm<sup>3</sup>/ : 47.0...57.0  
1000 s: (-)

LOW IDLE

Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 14.0...20.0  
1000 s: (-)

Remarks:

: JOHN DEERE NO.  
: AR 84716

Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1a11  
Edition : 16.5.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 045  
Injection pump  
Pump designation : PES6P110A720RS370  
Governor  
Governor design. : RSV400...1050PO/444  
DR

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45  
Overflow valve : 1 457 413 010  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 0 681 343 009  
Opening  
pressure, bar : 172...175  
Test lines : 1 680 750 015  
Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27  
Prestroke mm : 2.75...2.85  
(2.70...2.90)  
Rack travel in mm : 9.00...12.00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5(0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050  
-----  
Rack travel in mm : 12.60...12.70  
-----  
Del. quantity cm<sup>3</sup>/ : 17.6...18.0  
-----  
100 s : (17.3...18.3)  
-----  
Spread cm<sup>3</sup> : 4.0  
-----  
100 s : (-)  
-----  
2nd speed rpm : 400  
Rack travel in mm : 6.20...6.40  
Del. quantity cm<sup>3</sup>/ : 1.3...1.9  
100 s : (-)  
Spread cm<sup>3</sup> : 4.0  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h : 1200  
Del. quantity : 176.0...180.0  
1000 : (173.0...183.0)  
Spread cm<sup>3</sup> : 4.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 35...43

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1090...1110  
2nd rack travel in: 6.60  
Speed rpm : 1135...1165  
4th rack travel in: 1300  
Speed rpm : 0.30...1.70

## LOW IDLE 1



Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.80

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 520...580

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.60...12.70  
2nd speed rpm : 630  
Rack travel in m: 13.50...13.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 650  
Rack travel mm : 12.75...12.85

Measurement  
Speed 1/min : 500

1st pressure hPa : 280  
Rack travel in m: 10.30...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 630  
Del. quantity cm<sup>3</sup>/ : 197.5...200.5  
1000 s: (195.5...183.5)  
Spread cm<sup>3</sup> : -  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 96.0...102.0  
1000 s: (93.0...105.0)  
Spread cm<sup>3</sup> : -  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1095...1105

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0  
1000 s: (-)

#### HIGH IDLE

1st version  
Speed rpm : 1150  
Del. quantity cm<sup>3</sup>/ : 55.0...65.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 400  
Del. quantity cm<sup>3</sup>/ : 13.0...19.0  
1000 s: (-)

#### Remarks:

Start-of-delivery mark at control-rod  
travel 10.5 mm and 15° after start of  
delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 a2  
Edition : 5.5.88  
Replaces : 2.84  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 048  
  
Injection pump  
Pump designation : PES6P110A72ORS370  
EP type number : 0 412 016 052  
Governor  
Governor design. : RSV500...900PO/448DR  
Governor no. : 0 421 835 100

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619 T

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45  
  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 10.60...10.70  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 900  
-----  
Rack travel in mm : 10.60...10.70  
-----  
Del. quantity cm<sup>3</sup>/ : 12.3...12.5  
-----  
100 s : (12.0...12.8)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s : (-)  
-----  
2nd speed rpm : 500  
Rack travel in mm : 6.30...6.50  
Del. quantity cm<sup>3</sup>/ : 1.9...2.3  
100 s : (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 900  
Del. quantity : 123.0...125.0  
1000 : (120.0...128.0)  
Spread cm<sup>3</sup> : 4.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 38...46

Testing:  
1st rack travel in: 9.60  
Speed rpm : 940...950  
2nd rack travel in: 6.40  
Speed rpm : 970...1030  
4th rack travel in: 1100...1150  
Speed rpm : 0.30...1.00

## LOW IDLE 1

Control lever  
position degrees: 22...30  
Setting point w/out bumper spring

Speed rpm : 500  
Rack travel in mm : 5.9

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 500  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 660...720

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 10.60...10.70  
2nd speed rpm : 650  
Rack travel in m: 11.30...11.50

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 138.5...141.5  
1000 s: (135.5...143.5)  
Spread cm<sup>3</sup> : 6.0  
1000 s: (-)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 940...950

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (-)  
Rack travel in mm : 19.0...21.0

#### HIGH IDLE

##### 1st version

Speed rpm : 1000  
Rack travel in mm : 6.30...6.60  
Del. quantity cm<sup>3</sup>/ : 47.0...57.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 500  
Rack travel in mm : 6.30...6.50

Del. quantity cm<sup>3</sup>/ : 19.0...23.0

1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

#### Remarks:

: JD 850  
Start-of-delivery mark is at 15°  
angular displacement of the cam after  
start of delivery at cylinder 1 with  
control-rod travel 9.00...12.00 mm

#### APPLICATION

Tractor (tractor engines)

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 a 4  
 Edition : 29.04.88  
 Replaces : 14.8.87  
 Test oil : ISO-4113

Combination no. : 0 402 648 817

Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQ300/1050PA762-5  
 Governor no. : 0 421 801 399

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

D02

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance - - ° : 0.50 (0.75)  
 Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600  
 -----  
 Rack travel in mm : 14.10...14.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 20.3...20.5  
 -----  
 100 s: (20.0...20.8)  
 -----  
 Spread cm<sup>3</sup> : 0,5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 6.2...6.6  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 650  
 Del. quantity : 203.0...205.0  
 1000 : (200.0...208.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75  
2nd speed rpm : 1050  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 850  
Rack travel in m: 14.20...14.40  
4th speed rpm : 700  
Rack travel in m: 14.60...14.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600  
1st pressure hPa : 300  
Rack travel in m: 12.40...12.60  
2nd pressure hPa : 400  
Rack travel in m: 13.40...1.370  
3rd pressure hPa : 850  
Rack travel in m: 14.20...14.30  
4th pressure hPa : -  
Rack travel in m: 11.70...11.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

D03

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del.quantity cm3/ : 185.0...188.0  
1000 s: (182.0...191.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del.quantity cm3/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del.quantity cm3/ : 211.0...215.0  
1000 s: (208.0...218.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks: :

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 a 5  
 Edition : 11.03.88  
 Replaces : 21.12.87  
 Test oil : ISO-4113

Combination no. : 0 402 648 825

Injection pump  
 Pump designation : PE8P120A32QLS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQV300..1050PA797-3  
 Governor no. : 0 421 813 627

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 A

1st version kW : 260.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance ± ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600  
 -----  
 Rack travel in mm : 14.10...14.30  
 -----  
 Del. quantity cm3/ : 20.3...20.5  
 -----  
 100 s: (20.0...20.8)  
 -----  
 Spread cm3 : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 6.2...6.6  
 Del. quantity cm3/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm3 : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.20...1.40  
 2nd speed rpm : 600  
 travel mm : 4.90...5.10  
 3rd speed rpm : 1075  
 travel mm : 7.40...7.60  
 4th speed rpm : 1100  
 travel mm : 8.00...8.20  
 5th speed rpm : 1150  
 travel mm : 9.00...9.20

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1125  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 650  
Del. quantity : 203.0...205.0  
1000 : (200.0...208.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

RATED SPEED

1st version

Control lever  
position degrees: 54...62

Testing:

1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1155...1185  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever  
position degrees: 17...25

Testing:

Speed rpm : 100  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 1.40  
2nd speed rpm : 1050  
Rack travel in m: 13.20...13.40  
3rd speed rpm : 850  
Rack travel in m: 14.20...14.40  
4th speed rpm : 700  
Rack travel in m: 14.60...14.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 650  
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 12.40...12.60

DOS

2nd pressure hPa : 400  
Rack travel in m: 13.40...13.70  
3rd pressure hPa : 850  
Rack travel in m: 14.20...14.30  
4th pressure hPa : -  
Rack travel in m: 11.70...11.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 185.0...188.0  
1000 s: (182.0...191.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 215.0...219.0  
1000 s: (212.0...222.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1050  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 211.0...215.0  
1000 s: (208.0...218.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 175.0...190.0  
1000 s: (171.0...194.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 z  
 Edition : 6.4.88  
 Replaces : 7.86  
 Test oil : ISO-4113

Injection pump  
 Pump designation : PE12P120A320LS7805-1  
 EP type number : 0 412 620 804  
 Governor  
 Governor design. : RSV350...750POA825  
 Governor no. : 0 421 833 221

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 422 LA

1st version kW : 389.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar : 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)

Rack travel in mm : 9.00...12.00  
 Firing order : 12-1-5-9-8-3-4-11-10  
 -2-6-7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del. quantity cm<sup>3</sup>/ : 21.0...21.2

100 s : (20.7...21.5)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 350

Rack travel in mm : 5.40...5.60

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s : (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 210.0...212.0

1000 : (207.0...215.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 21...29

Testing:

1st rack travel in: 13.10



Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 780...790  
4th rack travel in: 1000  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.50

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 650  
Del. quantity cm<sup>3</sup>/ : 207.0...213.0  
1000 s: (204.0...213.0)  
Spread cm<sup>3</sup> : 8.0  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 13.10  
Speed rpm : 750...755

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 210.0...230.0  
1000 s: (206.0...234.0)

#### Remarks:

Observe VDT-I-420/120

0

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D 1  
 Edition : 29.04.88  
 Replaces : 25.08.87  
 Test oil : ISO-4113

Combination no. : 0 403 436 102

Injection pump  
 Pump designation : PES6MW100/12ORS1143  
 EP type number : 0 413 406 137  
 Governor  
 Governor design. : RQV300...1050MW78  
 Governor no. : 0 420 083 118

Customer-spec. information  
 Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 175.0  
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 017

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.15...3.25  
 : (3.10...3.30)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 14.9...15.1

100 s: (14.7...15.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.7...7.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1100

travel mm : 7.80...8.00

2nd speed rpm : 1170

travel mm : 8.50...8.90

3rd speed rpm : 300

travel mm : 0.80...1.20

4th speed rpm : 600

travel mm : 3.20...3.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 900

Del. quantity : 149.0...151.0

1000 : (147.0...153.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 11.60  
Speed rpm : 1120...1130  
2nd rack travel in: 4.00  
Speed rpm : 1205...1235  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.30  
Speed rpm : 300  
Rack travel in mm : 7.70...7.80

CONSTANT REGULATION  
Speed rpm : 320...550

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.90...10.10

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 10.80...10.90  
2nd pressure hPa : 520  
Rack travel in m: 12.20...12.50  
3rd pressure hPa : 900  
Rack travel in m: 12.60...12.70

START CUT-OUT

Speed 1/min : 220 (230)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 147.0...151.0  
1000 s: (145.0...153.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 88.0...90.0  
1000 s: (86.0...92.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.60  
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (202.0...228.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.70...7.80  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (14.0...22.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark/lock = 8.0°  
angular displacement of the cam after  
start of delivery of cylinder 1.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 D 3  
Edition : 29.04.88  
Replaces : 06.11.87  
Test oil : ISO-4113

Combination no. : 0 403 436 104

Injection pump  
Pump designation : PES6MW100/12ORS1143  
EP type number : 0 413 406 137  
Governor  
Governor design. : RQV350...1200MW82-1  
Governor no. : 0 420 083 153

Customer-spec. information  
Customer : CUMMINS/US

Engine : 6 CTA-830

1st version kW : 179.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.15...3.25  
                  : (3.10...3.30)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 13.6...13.8

100 s : (13.4...14.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.1...7.2

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s : (1.0...1.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250

travel mm : 7.60...7.80

2nd speed rpm : 1350

travel mm : 8.60...9.00

3rd speed rpm : 350

travel mm : 1.20...1.60

4th speed rpm : 800

travel mm : 4.90...5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h : 700

Del. quantity : 136.0...138.0

1000 : (134.0...140.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 42...50

Testing:

1st rack travel in: 11.00  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1370...1400  
4th rack travel in: 1455  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.1

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 7.10...7.20

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 750  
Rack travel in m: 12.50...12.60  
3rd speed rpm : 1000  
Rack travel in m: 12.00...12.10  
4th speed rpm : 900  
Rack travel in m: 12.10...12.30

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : 390  
Rack travel in m: 11.40...11.50  
2nd pressure hPa : 480  
Rack travel in m: 11.90...12.20  
3rd pressure hPa : 700  
Rack travel in m: 12.50...12.60

START CUT-OUT

Speed 1/min : 270 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 750  
Del.quantity cm<sup>3</sup>/ : 138.5...140.5  
1000 s: (135.5...143.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 108.0...110.0  
1000 s: (106.0...112.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (202.0...228.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.10...7.20  
Del.quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CUM 8,3 F  
Edition : 29.04.88  
Replaces : 19.02.88  
Test oil : ISO-4113

Combination no. : 0 403 436 105

Injection pump  
Pump designation : PES6MW100/12ORS1169  
EP type number : 0 413 406 153  
Governor  
Governor design. : RQV350...1200MW78-1  
Governor no. : 0 420 083 156

Customer-spec. information  
Customer : CDC

Engine : 6CTA830

1st version kW : 197.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 017

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 14.1...14.3

100 s : (13.9...14.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.4...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.60...9.00

2nd speed rpm : 1250

travel mm : 7.60...7.80

3rd speed rpm : 800

travel mm : 4.90...5.50

4th speed rpm : 350

travel mm : 1.20...1.60

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h : 600

Del. quantity : 141.0...143.0

1000 : (139.0...145.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees : 42...50

Testing:

1st rack travel in : 10.90

Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1385...1415  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

#### Testing:

Speed rpm : 100  
Minimum rack trave: 7.50  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 370...500

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.70...10.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 11.00...11.10  
2nd pressure hPa : 375  
Rack travel in m: 11.50...11.80  
3rd pressure hPa : 600  
Rack travel in m: 11.90...12.00

#### START CUT-OUT

Speed 1/min : 270 (280)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 600  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 137.5...141.5  
1000 s: (135.0...143.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 113.5...115.5  
1000 s: (111.5...117.5)

Spread cm<sup>3</sup> : 3.50  
1000 s: (6.00)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 218.0...228.0  
1000 s: (215.0...231.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (14.0...22.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : FIA 8,1 C 2  
 Edition : 19.05.88  
 Replaces : 08.84

Combination no. : 0 403 446 114

Injection pump  
 Pump designation : PES6MW100/72ORS1012  
 EP type number : 0 413 406 008  
 Governor  
 Governor design. : RQV300...1100MW19  
 Governor no. : 0 420 083 014

Customer-spec. information  
 Customer : FIA

Engine : 8365.25.500

1st version kW : 132.4  
 Rated speed : 2200

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32

Prestroke mm : 2.90...3.00  
 : (2.85...3.05)

Rack travel in mm : 9.0...12.0  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1100

Rack travel in mm : 11.50...11.60

Del. quantity cm<sup>3</sup>/ : 9.60...9.80  
 100 s : (9.40...10.00)

Spread cm<sup>3</sup> : 0.35  
 100 s : (0.6)

2nd speed rpm : 300  
 Rack travel in mm : 6.3...6.4  
 Del. quantity cm<sup>3</sup>/ : 1.1...1.5  
 100 s : (0.9...1.8)

Spread cm<sup>3</sup> : 0.35  
 100 s : 0.55

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1225  
 travel mm : 10.00...10.50

2nd speed rpm : 1150  
 travel mm : 9.10...9.30

3rd speed rpm : 500  
 travel mm : 2.90...3.50

4th speed rpm : 300  
 travel mm : 1.10...1.50

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 500  
 Del. quantity : 96.0...98.0  
 1000 : (94.0...100.0)

Spread cm<sup>3</sup> : 3.5  
 1000 : (6.0)

2nd version  
 Speed rpm : 500  
 Aneroid pressure h: -  
 Del. quantity cm<sup>3</sup>/ : 75.0...77.0  
 1000 s : (73.0...78.0)



Spread cm<sup>3</sup> : 3.5  
1000 s: (6.0)

#### RATED SPEED

1st version

Control lever  
position degrees: 45...53

Testing:

1st rack travel in: 10.50  
Speed rpm : 1140...1150  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
5th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:

Speed rpm : 100  
Minimum rack travel: 8.0  
Speed rpm : 300  
Rack travel in mm : 6.30...6.40  
Rack travel in mm : 2.00  
Speed rpm : 385...445

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 1000  
Rack travel in m: 11.50...11.60

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 270  
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.50...11.70  
2nd pressure hPa : 500  
Rack travel in m: 12.40...12.50  
3rd pressure hPa : -  
Rack travel in m: 11.20...11.30

START CUT-OUT

D15

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 500  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 101.0...105.0  
1000 s: (99.0...107.0)  
Spread cm<sup>3</sup> : 5.0  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 75.0...77.0  
1000 s: (73.0...78.0)  
Spread cm<sup>3</sup> : 3.5  
1000 s: (6.0)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 10.50  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.40  
Del. quantity cm<sup>3</sup>/ : 11.50...15.50  
1000 s: (9.0...18.0)  
Spread cm<sup>3</sup> : 3.5  
1000 s: (5.5)

Remarks:

Test electrically-released starting  
quantity (EES) with 12 volts

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 8,8 K 2  
 Edition : 25.03.88  
 Replaces : 12.02.88  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 122  
 Injection pump  
 Pump designation : PES6MW100/32ORS1016  
 EP type number : 0 413 406 010  
 Governor  
 Governor design. : RQV300...1400MW25-1  
 Governor no. : 0 420 083 039

Customer-spec. information  
 Customer : N.I

Engine : MIDR06.02-12

1st version kW : 125.0  
 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 9.1...9.3

100 s : (8.9...9.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.30...6.20

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1475  
 travel mm : 8.50...8.90

2nd speed rpm : 1350  
 travel mm : 7.60...7.80

3rd speed rpm : 500  
 travel mm : 3.00...3.40

4th speed rpm : 300  
 travel mm : 1.10...1.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1400

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1400

Aneroid pressure h : 500

Del. quantity : 91.5...93.5

1000 : (89.5...95.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1455...1465  
2nd rack travel in: 4.00  
Speed rpm : 1575...1605  
4th rack travel in: 1700  
Speed rpm : 1.00...0.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2  
Speed rpm : 300  
Rack travel in mm : 5.90...5.80  
Rack travel in mm : 2.00  
Speed rpm : 490...550  
Speed rpm : 200  
Maximum rack travel: 7.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 500  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.80...9.70  
2nd pressure hPa : 200  
Rack travel in m: 10.30...10.20  
3rd pressure hPa : 230  
Rack travel in m: 10.90...10.70

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 500  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 87.5...91.5  
1000 s: (85.5...93.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 56.0...58.0  
1000 s: (53.5...60.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1455...1465

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 94.0...104.0  
1000 s: (91.0...107.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.20  
Del. quantity cm<sup>3</sup>/ : 9.5...13.5  
1000 s: (7.0...16.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark is 8° after  
start of delivery with control-rod  
travel = 10.5 mm.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : RVI 8,8 K  
 Edition : 25.03.88  
 Replaces : 12.02.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 123

Injection pump  
 Pump designation : PES6MW100/32ORS1016  
 EP type number : 0 413 406 010  
 Governor  
 Governor design. : RQV300...1300MW25  
 Governor no. : 0 420 083 030

Customer-spec. information  
 Customer : RVI

Engine : MIDR06.02-12

1st version kW : 125.0  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

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Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1300

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 8.9...9.1

100 s: (8.7...9.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.80...5.70

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s: (0.7...1.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1475

travel mm : 8.50...8.90

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 3.00...3.40

4th speed rpm : 300

travel mm : 1.10...1.70

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1300

Aneroid pressure h: 665

Del. quantity : 89.5...91.5

1000 : (87.5...93.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 10.10  
Speed rpm : 1370...1380  
2nd rack travel in: 3.90  
Speed rpm : 1495...1525  
4th rack travel in: 1650  
Speed rpm : 1.00...0.00

LOW IDLE 1  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.9  
Speed rpm : 300  
Rack travel in mm : 5.90...5.80  
Speed rpm : 200  
Maximum rack travel: 3.60

CONSTANT REGULATION  
Speed rpm : 340...600

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 665  
Rack travel mm : 11.10...11.20

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...9.80  
2nd pressure hPa : 200  
Rack travel in m: 10.30...10.20  
3rd pressure hPa : 230  
Rack travel in m: 10.90...10.70

#### START CUT-OUT

Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 665  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 85.0...89.0  
1000 s: (83.0...91.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 56.0...58.0  
1000 s: (54.0...60.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.10  
Speed rpm : 1370...1380

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 95.0...105.0  
1000 s: (90.0...110.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.80...5.70  
Del. quantity cm<sup>3</sup>/ : 9.5...13.5  
1000 s: (7.0...16.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 D  
Edition : 06.04.88  
Replaces : 12.85  
Test oil : ISO-4113

Combination no. : 0 403 446 136

Injection pump  
Pump designation : PES6MW100/32ORS1107  
EP type number : 0 413 406 105  
Governor  
Governor design. : RQV350...1200MW43-2  
Governor no. : 0 420 083 055

Customer-spec. information  
Customer : NAVISTAR

Engine : DT466C

1st version kW : 132.4  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 9.4...9.6

100 s : (9.2...9.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350  
travel mm : 9.30...9.70

2nd speed rpm : 1250  
travel mm : 8.20...8.40

3rd speed rpm : 550  
travel mm : 2.90...3.50

4th speed rpm : 350  
travel mm : 1.30...1.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1355

Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h : 900

Del. quantity : 94.5...96.5

1000 : (92.5...98.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 59...64  
2nd rack travel in: 4.00  
Speed rpm : 1375...1385  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.0

## Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.90...6.10

## CONSTANT REGULATION

Speed rpm : 370...650

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 175  
Rack travel mm : 10.70...10.80

## Measurement

Speed 1/min : 500

1st pressure hPa : 900  
Rack travel in m: 11.80...11.90  
2nd pressure hPa : -  
Rack travel in m: 10.40...10.50  
3rd pressure hPa : 390  
Rack travel in m: 11.40...11.70

## START CUT-OUT

Speed 1/min : 220 (210)

## FUEL DELIVERY CHARACTERISTICS

## 1st version

Aneroid pressure h: 900  
Speed rpm : 1200  
Del. quantity cm<sup>3</sup>/ : 96.0...100.0  
1000 s: (94.0...102.0)

Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 70.0...72.0  
1000 s: (68.0...74.0)

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.90...6.10  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

## Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : VOL 6,1 H  
 Edition : 29.04.88  
 Replaces : 19.02.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 152

Injection pump  
 Pump designation : PES6MW100/32ORS1119  
 EP type number : 0 413 406 113  
 Governor  
 Governor design. : RQV300...1400MW57  
 Governor no. : 0 420 083 078

Customer-spec. information  
 Customer : VOLVO

Engine : TD 61-3012

1st version kW : 132.0  
 Rated speed : 2800

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1000

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 9.0...9.2

100 s : (8.8...9.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.9...7.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1580  
 travel mm : 9.50...9.90

2nd speed rpm : 1450  
 travel mm : 8.40...8.60

3rd speed rpm : 550  
 travel mm : 3.40...4.00

4th speed rpm : 300  
 travel mm : 1.20...1.60

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1480

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1000  
 Aneroid pressure h : 700  
 Del. quantity : 90.0...92.0

1000 : (88.0...94.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**



1st version  
Control lever  
position degrees: 58...66

Testing:  
1st rack travel in: 10.60  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1595...1625  
4th rack travel in: 1725  
Speed rpm : 0.10...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.90...7.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 460  
Rack travel mm : 11.20...11.30

Measurement  
Speed 1/min. : 550

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 350  
Rack travel in m: 10.30...10.60  
3rd pressure hPa : 700  
Rack travel in m: 11.40...11.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 75.0...77.0  
1000 s: (73.0...79.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

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1st version  
1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (137.0...163.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.90...7.00  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : VOIL 6,1 G  
 Edition : 29.04.88  
 Replaces : 19.02.88  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 153  
 Injection pump  
 Pump designation : PES6MW100/32ORS1119-1  
 EP type number : 0 413 406 114  
 Governor  
 Governor design. : RQV300..1400MWS7-1  
 Governor no. : 0 420 083 079

Customer-spec. information  
 Customer : VOLVO

Engine : TD 61..3012

1st version kW : 150.0  
 Rated speed : 2800

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32  
 Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1000

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 10.4...10.6

100 s: (10.3...10.9)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1580  
 travel mm : 9.50...9.90

2nd speed rpm : 1450  
 travel mm : 8.40...8.60

3rd speed rpm : 550  
 travel mm : 3.40...4.00

4th speed rpm : 300  
 travel mm : 1.20...1.60

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1480

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del. quantity : 104.0...106.0

1000 : (103.0...109.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1590...1620  
4th rack travel in: 1700  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.3

Testing:  
Speed rpm : 100  
Minimum rack trave: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.30...6.40

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 550  
Pressure hPa : 470  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 550

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 240  
Rack travel in m: 10.30...10.60  
3rd pressure hPa : 700  
Rack travel in m: 12.00...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: -  
Speed rpm : 1000  
Del.quantity cm3/ : 75.0...77.0  
1000 s: (73.0...79.0)

#### RACK STOP ADJUSTMENT

Speed rpm : 100

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.00  
Speed rpm : 1440...1450

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...160.0  
1000 s: (137.0...163.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.40  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 8,8 K 5  
Edition : 25.03.88  
Replaces : 12.02.88  
Test oil : ISO-4113

Combination no. : 0 403 446 165

Injection pump  
Pump designation : PES6MW100/32ORS1016  
EP type number : 0 413 406 010  
Governor  
Governor design. : RQV300...1300MW25-5  
Governor no. : 0 420 083 095

## Customer-spec. information

Customer : RVI

Engine : MIDR06.02-12 F

1st version kW : 125.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 173...176

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.00...3.10  
                  : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Del. quantity cm<sup>3</sup>/ : 8.9...9.1  
-----  
100 s : (8.7...9.3)  
-----

Spread cm<sup>3</sup> : 0.3  
-----  
100 s : (0.6)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 5.3...5.4  
Del. quantity cm<sup>3</sup>/ : 0.9...1.3  
100 s : (0.7...1.6)

Spread cm<sup>3</sup> : 0.3  
100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1475  
travel mm : 8.50...8.90

2nd speed rpm : 1350  
travel mm : 7.60...7.80

3rd speed rpm : 500  
travel mm : 3.00...3.40

4th speed rpm : 300  
travel mm : 1.10...1.70

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1300  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1300  
Aneroid pressure h: 665  
Del. quantity : 89.5...91.5  
1000 : (87.5...93.5)

Spread cm<sup>3</sup> : 3.50  
1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 60...68

Testing:

1st rack travel in: 10.10  
Speed rpm : 1370...1380  
2nd rack travel in: 3.90  
Speed rpm : 1495...1525  
4th rack travel in: 1650  
Speed rpm : 1.00...0.00

LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.2  
Speed rpm : 300  
Rack travel in mm : 5.90...5.80  
Speed rpm : 200  
Maximum rack travel: 3.60

CONSTANT REGULATION

Speed rpm : 340...600

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 665  
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...9.80  
2nd pressure hPa : 200  
Rack travel in m: 10.30...10.20  
3rd pressure hPa : 230  
Rack travel in m: 10.90...10.80

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 665  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 86.5...90.5  
1000 s: (84.5...92.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 56.0...58.0  
1000 s: (54.0...60.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1370...1380

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 95.0...105.0  
1000 s: (92.0...108.0)

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 5.80...5.70  
Del. quantity cm<sup>3</sup>/ : 9.5...13.5  
1000 s: (7.0...16.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:  
Start-of-delivery mark is at 8° after  
start of delivery.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R11  
Edition : 06.04.88  
Replaces : 19.02.88  
Test oil : ISO-4113

Combination no. : 0 403 446 174

Injection pump  
Pump designation : PES6MW100/32ORS1140  
EP type number : 0 413 406 135  
Governor  
Governor design. : RQV350...1200MW46-7  
Governor no. : 0 420 083 107

Customer-spec. information  
Customer : NAVISTAR

Engine : DT-466 C

1st version kW : 134.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.6...6.7

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
travel mm : 7.80...8.00

2nd speed rpm : 1340  
travel mm : 8.80...9.20

3rd speed rpm : 500  
travel mm : 2.60...3.20

4th speed rpm : 350  
travel mm : 1.30...1.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1380

Rack travel in mm : 6.60...9.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h: 700

Del. quantity : 91.5...93.5

1000 : (89.5...95.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 45...50

### Testing:

1st rack travel in: 10.40  
Speed rpm : 1240...1260  
2nd rack travel in: 4.00  
Speed rpm : 1360...1370  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.6

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.60...6.70

## CONSTANT REGULATION

Speed rpm : 370...500

Aneroid/Altitude  
Compensator Test

### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 170  
Rack travel mm : 10.30...10.40

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 310  
Rack travel in m: 10.60...10.90  
3rd pressure hPa : 700  
Rack travel in m: 11.40...11.50

## START CUT-OUT

Speed 1/min : 280 (290)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700

E01

Speed rpm : 1200  
Del.quantity cm3/ : 94.0...98.0  
1000 s: (92.0...100.0)  
Spread cm3 : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 66.0...68.0  
1000 s: (64.0...70.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1240...1260

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.60...6.70  
Del.quantity cm3/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:  
Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 26  
Edition : 29.04.88  
Replaces : 10.08.87  
Test oil : ISO-4113

Combination no. : 0 403 446 177

Injection pump  
Pump designation : PES6MW100/72ORS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RQV300...1300MW48  
Governor no. : 0 420 083 066

Customer-spec. information  
Customer : DB

Engine : OM366A

1st version kW : 125.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
× Wall thickness  
× Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)

Rack travel in mm : 9.00...12.00

E03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del. quantity cm<sup>3</sup>/ : 7.7...7.9

100 s : (7.5...8.1)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 8.50...8.70

2nd speed rpm : 1450

travel mm : 9.30...9.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.70  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION  
Speed rpm : 330...500

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.00...11.10  
2nd speed rpm : 800  
Rack travel in m: 11.80...12.00  
3rd speed rpm : 585  
Rack travel in m: 12.00...12.20  
4th speed rpm : 1100  
Rack travel in m: 11.00...11.10

START CUT-OUT  
Speed 1/min : 230 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 76.0...78.0  
1000 s: (74.0...80.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 585  
Del. quantity cm<sup>3</sup>/ : 68.5...71.5  
1000 s: (66.0...74.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

#### BREAKAWAY

E04

1st version  
1mm rack travel less than  
full load rack tr: 10.00  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Del. quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : IHC 7,6 R14  
 Edition : 06.04.88  
 Replaces : 19.02.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 183

Injection pump  
 Pump designation : PES6MW100/32ORS1112  
 EP type number : 0 413 406 108  
 Governor  
 Governor design. : RQV350...1300MW46-11  
 Governor no. : 0 420 083 120

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT-466 C

1st version kW : 154.5  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
 assembly : 1 688 901 016

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 900  
 -----  
 Rack travel in mm : 11.00...11.10  
 -----  
 Del. quantity cm<sup>3</sup>/ : 10.6...10.8  
 -----  
 100 s : (10.4...11.0)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 5.7...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s : (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1350  
 travel mm : 8.30...8.50  
 2nd speed rpm : 1460  
 travel mm : 9.10...9.50  
 3rd speed rpm : 550  
 travel mm : 3.10...3.70  
 4th speed rpm : 350  
 travel mm : 1.30...1.70

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1510  
 Rack travel in mm : 6.60...9.40

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 900  
 Aneroid pressure h: 700  
 Del. quantity : 106.5...108.5  
 1000 : (104.5...110.5)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 45...50

Setting point:  
Speed rpm : 1510  
Rack travel in mm : 8.0

Testing:  
1st rack travel in: 10.00  
Speed rpm : 1345...1365  
2nd rack travel in: 4.00  
Speed rpm : 1455...1465  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 5.70...5.80

CONSTANT REGULATION  
Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 170  
Rack travel mm : 10.20...10.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.90...10.00  
2nd pressure hPa : 315  
Rack travel in m: 10.60...10.90  
3rd pressure hPa : 700  
Rack travel in m: 11.00...11.10

## START CUT-OUT

Speed 1/min : 220 (210)

## FUEL DELIVERY CHARACTERISTICS

E06

1st version  
Aneroid pressure h: 700  
Speed rpm : 1300  
Del. quantity cm<sup>3</sup>/ : 108.0...112.0  
1000 s: (106.0...114.0)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 81.5...83.5  
1000 s: (79.5...85.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1345...1365

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 5.70...5.80  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 6,0 D 34  
Edition : 29.04.88  
Replaces : 10.04.87  
Test oil : ISO-4113  
  
Combination no. : 0 403 446 184  
  
Injection pump  
Pump designation : PES6MW100/72ORS1144  
EP type number : 0 413 406 138  
Governor  
Governor design. : RQV300...1300MW48-3  
Governor no. : 0 420 083 121

Customer-spec. information  
Customer : DB

Engine : OM366A

1st version kW : 125.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
: (3.65...3.85)  
Rack travel in mm : 19.00...21.00

E08

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.90...11.00

Del. quantity cm<sup>3</sup>/ : 7.2...7.4

100 s : (7.0...8.6)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...7.9

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.6...1.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 8.50...8.70

2nd speed rpm : 1450

travel mm : 9.30...9.70

3rd speed rpm : 500

travel mm : 2.70...3.30

4th speed rpm : 300

travel mm : 1.20...1.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del. quantity : 72.0...74.0

1000 : (70.0...86.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever  
position degrees: 50...58

Testing:

1st rack travel in: 9.90  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1425...1455  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.8

Testing:

Speed rpm : 100  
Minimum rack travel: 9.30  
Speed rpm : 300  
Rack travel in mm : 7.80...7.90

CONSTANT REGULATION

Speed rpm : 330...500

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 10.90...11.00  
2nd speed rpm : 800  
Rack travel in m: 11.60...11.80  
3rd speed rpm : 585  
Rack travel in m: 11.80...12.00

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 71.0...73.0  
1000 s: (69.0...75.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Speed rpm : 585  
Del. quantity cm<sup>3</sup>/ : 65.0...68.0  
1000 s: (62.5...70.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.00)

BREAKAWAY

1st version

E09

1mm rack travel less than

full load rack tr: 9.90  
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.80...7.90  
Del. quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (6.5...15.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 R15  
Edition : 06.04.88  
Replaces : 19.02.88  
Test oil : ISO-4113

Combination no. : 0 403 446 185

Injection pump  
Pump designation : PES6MW100/32ORS1140  
EP type number : 0 413 406 135  
Governor  
Governor design. : RQV350...1200MW72-1  
Governor no. : 0 420 083 122

Customer-spec. information  
Customer : NAVISTAR

Engine : DT-466 C

1st version kW : 134.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 9.1...9.3

100 s: (8.9...9.5)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.6...6.7

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1250  
travel mm : 7.80...8.00

2nd speed rpm : 1340  
travel mm : 8.80...9.20

3rd speed rpm : 500  
travel mm : 2.60...3.20

4th speed rpm : 350  
travel mm : 1.30...1.80

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1510

Rack travel in mm : 6.70...9.30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Del. quantity : 91.5...93.5

1000 : (89.5...95.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)



## RATED SPEED

1st version  
Control lever  
position degrees: 42...47

### Testing:

1st rack travel in: 10.40  
Speed rpm : 1250...1270  
2nd rack travel in: 4.00  
Speed rpm : 1360...1370  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.6

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.60...6.70

## CONSTANT REGULATION

Speed rpm : 370...500

## START CUT-OUT

Speed 1/min : 280 (290)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 1200  
Del. quantity cm<sup>3</sup>/ : 94.0...98.0  
1000 s: (92.0...100.0)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 1250...1270

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

E11

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.60...6.70  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than  $n = 500$  1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : RVI 8,8 Q  
 Edition : 22.04.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 446 190  
 Injection pump  
 Pump designation : PES6MW100/32ORS1154  
 EP type number : 0 413 406 144  
 Governor  
 Governor design. : RQV275...1250MW80  
 Governor no. : 0 420 083 128

Customer-spec. information  
 Customer : RVI

Engine : MIDR 060226

1st version kw : 128.7  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00

E12

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 250

Rack travel in mm : 12.90...13.00

Del. quantity cm<sup>3</sup>/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 275.0

Rack travel in mm : 6.0...5.8

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1475

travel mm : 9.20...9.60

2nd speed rpm : 1300

travel mm : 7.80...8.00

3rd speed rpm : 500

travel mm : 3.00...3.60

4th speed rpm : 275

travel mm : 1.00...1.40

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1300

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1250

Aneroid pressure h: 800

Del. quantity : 99.5...101.5

1000 : (97.5...103.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 48...56

Testing:  
1st rack travel in: 11.90  
Speed rpm : 1330...1350  
2nd rack travel in: 3.90  
Speed rpm : 1490...1530  
4th rack travel in: 1600  
Speed rpm : 1.00...0.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 7.0

Testing:  
Speed rpm : 200  
Minimum rack travel: 8.50  
Speed rpm : 275  
Rack travel in mm : 6.00...5.80

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Rack travel mm : 10.90...10.80

Measurement  
Speed 1/min : 500

1st pressure hPa : 170  
Rack travel in m: 11.50...11.40  
2nd pressure hPa : 360  
Rack travel in m: 12.40...12.30  
3rd pressure hPa : 800  
Rack travel in m: 12.90...13.00

#### START CUT-OUT

Speed 1/min : 200 (220)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 90.0...94.0  
1000 s: (88.0...96.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 47.0...49.0  
1000 s: (45.0...51.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.90  
Speed rpm : 1330...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 120.0...140.0  
1000 s: (117.0...143.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 6.00...5.80  
Del. quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.0...22.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.00)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : IHC 7,6 S  
 Edition : 06.04.88  
 Replaces : 19.02.88  
 Test oil : ISO-4113

Combination no. : 0 403 446 193

Injection pump  
 Pump designation : PES6MW100/32ORS1159  
 EP type number : 0 413 406 146  
 Governor  
 Governor design. : RQV350...1300MW72-3  
 Governor no. : 0 420 083 142

Customer-spec. information  
 Customer : NAVISTAR

Engine : DT-466

1st version kW : 136.0  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder assembly : 1 688 901 016

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**  
 Test pressure, bar : 30...32

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 900  
 -----  
 Rack travel in mm : 10.60...10.70  
 -----  
 Del. quantity cm<sup>3</sup>/ : 9.0...9.2  
 -----  
 100 s : (8.8...9.4)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----  
 2nd speed rpm : 350.0  
 Rack travel in mm : 6.4...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.0  
 100 s : (1.3...2.2)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1250  
 travel mm : 7.80...8.00  
 2nd speed rpm : 1340  
 travel mm : 8.80...9.20  
 3rd speed rpm : 500  
 travel mm : 2.60...3.20  
 4th speed rpm : 350  
 travel mm : 1.30...1.80

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1500  
 Rack travel in mm : 6.70...9.30

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 900  
 Del. quantity : 90.0...92.0  
 1000 : (88.0...94.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 46...51

### Testing:

1st rack travel in: 9.60  
Speed rpm : 1370...1390  
2nd rack travel in: 4.00  
Speed rpm : 1475...1485  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.4

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.40...6.50

## CONSTANT REGULATION

Speed rpm : 370...500

## START CUT-OUT

Speed 1/min : 280 (290)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Speed rpm : 1300  
Del. quantity cm<sup>3</sup>/ : 94.0...98.0  
1000 s: (92.0...100.0)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)

## BREAKAWAY

### 1st version

1mm rack travel less than

full load rack tr: 9.60  
Speed rpm : 1370...1390

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

E15

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.40...6.50  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than  $n = 500$  1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.



## RATED SPEED

1st version  
Control lever  
position degrees: 43...48

### Testing:

1st rack travel in: 10.00  
Speed rpm : 1270...1290  
2nd rack travel in: 4.00  
Speed rpm : 1380...1390  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.40

## CONSTANT REGULATION

Speed rpm : 360...450

## Aneroid/Altitude Compensator Test

### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 200  
Rack travel mm : 10.70...10.80

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 280  
Rack travel in m: 10.80...11.10  
3rd pressure hPa : 800  
Rack travel in m: 11.00...11.10

## START CUT-OUT

Speed 1/min : 280 (290)

## FUEL DELIVERY CHARACTERISTICS

### 1st version

Aneroid pressure h: 800

Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 101.0...105.0  
1000 s: (99.0...107.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 84.0...86.0  
1000 s: (82.0...88.0)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1270...1290

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.40  
Del.quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

## Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 7,6 T 1  
Edition : 06.04.88  
Replaces : 19.02.88  
Test oil : ISO-4113

Combination no. : 0 403 446 199

Injection pump  
Pump designation : PES6MW100/32ORS1160  
EP type number : 0 413 406 147  
Governor  
Governor design. : RGV350...1200MW46-17  
Governor no. : 0 420 083 148

Customer-spec. information  
Customer : NAVISTAR

Engine : DTA-466

1st version kW : 154.5  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder  
assembly : 1 688 901 016

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 4.00...4.10  
                  : (3.95...4.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 800

Rack travel in mm : 11.30...11.40

Del. quantity cm<sup>3</sup>/ : 10.1...10.3

100 s : (9.9...10.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.3...6.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

travel mm : 8.30...8.50

2nd speed rpm : 1460

travel mm : 9.10...9.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1410

Rack travel in mm : 6.60...9.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 800

Aneroid pressure h : 800

Del. quantity : 101.0...103.0

1000 : (99.0...105.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...49

### Testing:

1st rack travel in: 10.30  
Speed rpm : 1260...1280  
2nd rack travel in: 4.00  
Speed rpm : 1375...1385  
4th rack travel in: 1500  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.3

### Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.40

## CONSTANT REGULATION

Speed rpm : 300...450

Aneroid/Altitude  
Compensator Test

## 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 190  
Rack travel mm : 10.60...10.70

### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.20...10.30  
2nd pressure hPa : 290  
Rack travel in m: 10.90...11.20  
3rd pressure hPa : 800  
Rack travel in m: 11.30...11.40

## START CUT-OUT

Speed 1/min : 280 (290)

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 800

E20

Speed rpm : 1200  
Del. quantity cm<sup>3</sup>/ : 104.0...108.0  
1000 s: (102.0...110.0)  
Spread cm<sup>3</sup> : 6.50  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 75.5...77.5  
1000 s: (73.5...79.5)

## BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1260...1280

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...180.0  
1000 s: (137.0...183.0)  
Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.30...6.40  
Del. quantity cm<sup>3</sup>/ : 16.0...20.0  
1000 s: (13.5...22.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

## Remarks:

Perform pump setting only with IH hose  
with restriction of 1.2 mm diameter.

Before checking sleeve position,  
first adjust latching.

In unlatched condition, do not  
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before  
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 C 2  
 Edition : 06.04.88  
 Replaces : 21.08.87  
 Test oil : ISO-4113  
 Combination no. : 0 403 466 103  
 Injection pump  
 Pump designation : PES6MW100/12ORS1137  
 EP type number : 0 413 406 131  
 Governor  
 Governor design. : RSV425...1100MW2A319  
 -2  
 Governor no. : 0 420 085 062  
 Customer-spec. information  
 Customer : CUMMINS/US  
 Engine : 6 CTA-8.3 L  
 1st version kW : 188.0  
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 017  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0.6  
 Test lines : 1 680 750 008  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

E22

Prestroke mm : 3.50...3.60  
 : (3.45...3.65)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)  
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 14.10...14.20  
 -----  
 Del. quantity cm<sup>3</sup>/ : 14.2...14.4  
 -----  
 100 s: (14.0...14.6)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 425.0  
 Rack travel in mm : 7.8...7.9  
 Del. quantity cm<sup>3</sup>/ : 1.9...2.3  
 100 s: (1.6...2.5)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Del. quantity : 142.0...144.0  
 1000 : (140.0...146.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 42...50

Testing:  
 1st rack travel in: 13.10  
 Speed rpm : 1140...1150  
 2nd rack travel in: 4.00

Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 18...26  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 7.8

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 7.80...7.90

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 4.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 14.10...14.20  
2nd speed rpm : 750  
Rack travel in m: 14.80...14.90  
3rd speed rpm : 900  
Rack travel in m: 14.50...14.70

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 148.5...150.5  
1000 s: (146.5...152.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than  
full load rack tr: 13.10  
Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...145.0  
1000 s: (122.0...148.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

Speed rpm : 425  
Rack travel in mm : 7.80...7.90

E23

Del. quantity cm<sup>3</sup>/ : 19.0...23.0  
1000 s: (16.5...25.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:  
Start-of-delivery mark at 10° cam  
rotation angle after start of delivery,  
cylinder 1  
Starting/full-load transition speed  
from holding magnet = 500 1/min.

Adjust stop lever to 0.5...1.0 mm  
before stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 8  
 Edition : 19.05.88  
 Replaces : 28.10.86  
 Test oil : ISO-4113

Combination no. : 0 403 476 040

Injection pump  
 Pump designation : PES6MW100/72ORS1130  
 EP type number : 0 413 406 122  
 Governor  
 Governor design. : RSV350...750MWOA318-1  
 Governor no. : 0 420 085 055

Customer-spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 84.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del. quantity cm<sup>3</sup>/ : 8.0...8.2

100 s : (7.8...8.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.5...7.6

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 80.0...82.0

1000 : (78.0...84.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 24...32

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 12.0

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 775...788

4th rack travel in: 800  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 11...19  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.5

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.50...7.60

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.0  
Speed rpm : 750...755

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 88.0...98.0  
1000 s: (85.0...101.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.50...7.60  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

#### Remarks:

:

When setting the governor, the  
throttle screw of damper 1 must be  
open 1 turn.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 d 6  
 Edition : 19.05.88  
 Replaces : 11.85  
 Test oil : ISO-4113

Combination no. : 0 403 476 041

Injection pump  
 Pump designation : PES6MW100/72ORS1129  
 EP type number : 0 413 406 121  
 Governor  
 Governor design. : RSV350...750MWOA318-  
 2  
 Governor no. : 0 420 085 056

Customer-spec. information  
 Customer : DB

Engine : OM 366 LA

1st version kW : 94.0  
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

E26

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 8.5...8.7  
 100 s : (8.3...8.9)

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

2nd speed rpm : 350.0  
 Rack travel in mm : 6.1...6.2  
 Del. quantity cm<sup>3</sup>/ : 0.9...1.3  
 100 s : (0.7...1.5)

Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 700  
 Del. quantity : 85.0...87.0  
 1000 : (83.0...89.0)

Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
 Control lever  
 position degrees: 24...32

Setting point:

Speed rpm : 800  
 Rack travel in mm : 0.6

Testing:

1st rack travel in : 11.50  
 Speed rpm : 750...755  
 2nd rack travel in : 4.00  
 Speed rpm : 755...788



4th rack travel in: 820  
Speed rpm : 0.30...1.70

LOW IDLE 1  
Control lever  
position degrees: 10...18  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.10...6.20

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 88.0...98.0  
1000 s: (85.0...101.0)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.10...6.20  
Del.quantity cm<sup>3</sup>/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

When setting the governor, the  
throttle screw of damper 1 must be  
open 1 turn.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 A 13  
Edition : 19.05.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 403 476 049

Injection pump  
Pump designation : PES6MW100/72ORS1125-  
1  
EP type number : 0 413 406 132  
Governor  
Governor design. : RSV600...1300MWOA320  
Governor no. : 0 420 085 060

Customer-spec. information  
Customer : DB

Engine : OM 362 LA

1st version kW : 134.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.20...3.30  
: (3.15...3.35)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1280

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 9.6...9.8

100 s : (9.4...10.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 600.0

Rack travel in mm : 5.6...5.7

Del. quantity cm<sup>3</sup>/ : 0.9...1.3

100 s : (0.7...1.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1280

Del. quantity : 96.0...98.0

1000 : (94.0...100.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 55...63

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in : 10.80

Speed rpm : 1330...1340

2nd rack travel in : 4.00

Speed rpm : 1400...1430

4th rack travel in: 1560  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 600  
Rack travel in mm : 5.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 600  
Rack travel in mm : 5.60...5.70

#### SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm3/ : 86.0...90.0  
1000 s: (84.0...92.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1330...1340

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 88.0...98.0  
1000 s: (85.0...101.0)

#### LOW IDLE

Speed rpm : 600  
Rack travel in mm : 5.60...5.70  
Del.quantity cm3/ : 9.0...13.0  
1000 s: (7.0...15.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

F01

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 43  
 Edition : 19.05.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 476 054  
 Injection pump  
 Pump designation : PES6MW100/72ORS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RSV350...1200MWOA316  
 -7  
 Governor no. : 0 420 085 092

Customer-spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 115.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

F02

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 7.8...8.0

100 s : (7.6...8.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.6

Del. quantity cm<sup>3</sup>/ : 0.9...1.1

100 s : (0.6...1.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 3.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 78.0...80.0

1000 : (76.0...82.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 63...71

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 10.80

Speed rpm : 1240...1245  
2nd rack travel in: 4.00  
Speed rpm : 1285...1298  
3rd rack travel in: 4.00  
Speed rpm : 1320...1350  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1255  
Speed rpm : 10.80

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 7.00...7.60  
Rack travel in mm : 2.00  
Speed rpm : 445...505

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 11.80...11.90  
2nd speed rpm : 750  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 1000  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 750  
Del.quantity cm3/ : 72.0...74.0  
1000 s: (70.0...76.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1240...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

F03

Speed rpm : 350  
Rack travel in mm : 7.00...7.60  
Del.quantity cm3/ : 9.0...11.0  
1000 s: (6.0...14.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 32  
 Edition : 02.11.87  
 Replaces : 05.02.88  
 Test oil : ISO-4113

Combination no. : 0 403 476 054

Injection pump  
 Pump designation : PES6MW100/72ORS1144  
 EP type number : 0 413 406 138  
 Governor  
 Governor design. : RSV350...1200MW1A316  
 -2  
 Governor no. : 0 420 085 076

Customer-spec. information  
 Customer : DB

Engine : OM366A

1st version kW : 115.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY  
 Test pressure, bar : 30...32

Prestroke mm : 3.70...3.80  
 : (3.65...3.85)

F04

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 9.60...9.70

Del. quantity cm<sup>3</sup>/ : 6.0...6.2

100 s: (5.8...6.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 6.30...6.90

Del. quantity cm<sup>3</sup>/ : 0.9...1.1

100 s: (0.6...1.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 15.0

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 60.0...62.0

1000 : (58.0...64.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 58...66

Setting point:

Speed rpm : 800

Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.60

Speed rpm : 1240...1245  
2nd rack travel in: 4.00  
Speed rpm : 1263...1276  
3rd rack travel in: 4.00  
Speed rpm : 1290...1320  
4th rack travel in: 1450  
Speed rpm : 0.30...1.70  
5th rack travel in: 1240...1255  
Speed rpm : 8.60

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.6

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 350  
Rack travel in mm : 6.30...6.90  
Rack travel in mm : 2.00  
Speed rpm : 415...475

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 9.60...9.70  
2nd speed rpm : 800  
Rack travel in m: 10.50...10.60  
3rd speed rpm : 950  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm3/ : 59.0...61.0  
1000 s: (57.0...63.0)  
Spread cm3 : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 8.60  
Speed rpm : 1240...1245

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 19.00...21.00

#### LOW IDLE

F05

Speed rpm : 350  
Rack travel in mm : 6.30...6.90  
Del.quantity cm3/ : 9.0...11.0  
1000 s: (6.0...14.0)  
Spread cm3 : 3.50  
1000 s: (5.00)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 9,6 U  
Edition : 06.04.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 403 476 061  
Injection pump  
Pump designation : PES6MW100/72ORS1168  
EP type number : 0 413 406 154  
Governor  
Governor design. : RSV300...750MW7A328  
Governor no. : 0 420 085 086

Customer-spec. information  
Customer : TAM/YU

Engine : BF6L413

1st version kW : 134.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
: Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.95...3.05  
: (2.90...3.10)  
Rack travel in mm : 9.00...12.00

F06

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.50...14.60

Del. quantity cm<sup>3</sup>/ : 16.2...16.4

100 s: (16.0...16.6)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm<sup>3</sup>/ : 2.6...3.0

100 s: (2.4...3.2)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 162.0...164.0

1000 : (160.0...166.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version

Control lever

position degrees: 38...46

Testing:

1st rack travel in: 13.5

Speed rpm : 745...750

2nd rack travel in: 4.00

Speed rpm : 771...784

3rd rack travel in: 4.00

Speed rpm : 805...835

4th rack travel in: 930

Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever

position degrees: 14...22

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 6.0



Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 300  
Rack travel in mm : 5.90...6.10  
Rack travel in mm : 2.00  
Speed rpm : 320...350

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 155.0...175.0  
1000 s: (152.0...178.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : KHD 9,7 A  
 Edition : 25.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 546 003  
 Injection pump  
 Pump designation : PE6MW100/720LS1117  
 EP type number : 0 413 506 105  
 Governor  
 Governor design. : RQ350/1250MW26  
 Governor no. : 0 420 082 007

Customer-spec. information  
 Customer : KHD

Engine : F6L413FX

1st version kW : 150.0  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 000  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 0 681 343 009  
 Opening  
 pressure, bar : 172...175  
 Test lines : 1 680 740 014  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32  
 Prestroke mm : 3.10...3.20  
 : (3.05...3.25)  
 Rack travel in mm : 9.00...12.00

F08

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1250  
 -----  
 Rack travel in mm : 11.90...12.00  
 -----  
 Del. quantity cm<sup>3</sup>/ : 11.1...11.3  
 -----  
 100 s : (10.9...11.5)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s : (0.6)  
 -----  
 2nd speed rpm : 350.0  
 Rack travel in mm : 8.2...8.4  
 Del. quantity cm<sup>3</sup>/ : 1.2...1.6  
 100 s : (1.0...1.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1350  
 travel mm : 9.10...9.50  
 2nd speed rpm : 1300  
 travel mm : 6.60...6.80  
 3rd speed rpm : 550  
 travel mm : 5.70...6.30  
 4th speed rpm : 350  
 travel mm : 2.80...3.20

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1250  
 Del. quantity : 111.0...113.0  
 1000 : (109.0...115.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version

Control lever  
position degrees: 29...37

Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1295...1310  
2nd rack travel in: 4.00  
Speed rpm : 1345...1375  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 12...20  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 8.3

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.90  
Speed rpm : 350  
Rack travel in mm : 8.20...8.40  
Rack travel in mm : 2.00  
Speed rpm : 380...440

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 850  
Rack travel in m: 12.40...12.50  
3rd speed rpm : 1100  
Rack travel in m: 11.90...12.00

#### START CUT-OUT

Speed 1/min : 270 (300)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 109.5...113.5  
1000 s: (107.5...115.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00

F09

Speed rpm : 1295...1310

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 126.5...136.5  
1000 s: (123.5...139.5)

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 8.20...8.40  
Del. quantity cm<sup>3</sup>/ : 12.5...16.5  
1000 s: (10.0...19.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : STE 6,5 L 4  
 Edition : 25.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 546 010  
 Injection pump  
 Pump designation : PE6MW100/72ORS1157  
 EP type number : 0 413 506 103  
 Governor  
 Governor design. : RQV250...1200MW93  
 Governor no. : 0 420 083 136

Customer-spec. information  
 Customer : STEYR

Engine : WD 612.63

1st version kW : 130.0  
 Rated speed : 2400

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 : Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

F10

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1200

Rack travel in mm : 11.80...11.90

Del. quantity cm<sup>3</sup>/ : 10.4...10.6

100 s : (10.2...10.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.0

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s : (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1340

travel mm : 10.00...10.40

2nd speed rpm : 1230

travel mm : 8.30...8.50

3rd speed rpm : 700

travel mm : 4.00...4.60

4th speed rpm : 250

travel mm : 0.80...1.20

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1200

Aneroid pressure h : 700

Del. quantity : 104.0...106.0

1000 : (102.0...108.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 10.80  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.9

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.00  
Speed rpm : 250  
Rack travel in mm : 5.90...6.00

CONSTANT REGULATION  
Speed rpm : 495...565

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.00...11.10

Measurement  
Speed 1/min : 500  
2nd pressure hPa : 450  
Rack travel in m: 11.40...11.50  
3rd pressure hPa : 700  
Rack travel in m: 11.80...11.90

#### START CUT-OUT

Speed 1/min : 190 (210)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm<sup>3</sup>/ : 99.0...103.0  
1000 s: (97.0...105.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -

Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 78.0...80.0  
1000 s: (76.0...82.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.80  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.00  
Del.quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 6,5 L 1  
Edition : 25.03.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 0 403 546 011  
  
Injection pump  
Pump designation : PE6MW100/72ORS1157  
EP type number : 0 413 506 103  
Governor  
Governor design. : RQV250...1200MW93-1  
Governor no. : 0 420 083 137

Customer-spec. information  
Customer : STEYR

Engine : WD 612.65

1st version kW : 154.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
: Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.20...13.30

Del. quantity cm<sup>3</sup>/ : 12.4...12.6

100 s : (12.2...12.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.0...6.2

Del. quantity cm<sup>3</sup>/ : 1.1...1.5

100 s : (0.9...1.7)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1340  
travel mm : 10.00...10.40

2nd speed rpm : 1230  
travel mm : 8.30...8.50

3rd speed rpm : 700  
travel mm : 4.00...4.60

4th speed rpm : 250  
travel mm : 0.80...1.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h : 700

Del. quantity : 124.5...126.5

1000 : (122.5...128.5)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1305...1335  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 250  
Rack travel in mm : 6.00...6.20

CONSTANT REGULATION  
Speed rpm : 260...450

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 330  
Rack travel mm : 11.80...11.90

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 490  
Rack travel in m: 12.70...13.00  
3rd pressure hPa : 700  
Rack travel in m: 13.20...13.30

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 122.5...126.5  
1000 s: (120.5...128.5)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 80.0...82.0  
1000 s: (78.0...84.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.00...6.20  
Del. quantity cm<sup>3</sup>/ : 11.0...15.0  
1000 s: (9.0...17.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 6,5 L  
Edition : 25.03.88  
Replaces : 11.02.87  
Test oil : ISO-4113

Combination no. : 0 403 546 012

Injection pump  
Pump designation : PE6MW100/72ORS1157  
EP type number : 0 413 506 103  
Governor  
Governor design. : RQV250...1200MW93-2  
Governor no. : 0 420 083 138

Customer-spec. information  
Customer : STEYR

Engine : WD 612.93

1st version kW : 165.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
: Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.00...3.10  
: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.50...13.60

Del. quantity cm<sup>3</sup>/ : 13.1...13.3

100 s : (12.9...13.5)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.9...6.0

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s : (1.0...1.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1340

travel mm : 10.00...10.40

2nd speed rpm : 1230

travel mm : 8.30...8.50

3rd speed rpm : 700

travel mm : 4.00...4.60

4th speed rpm : 250

travel mm : 0.80...1.20

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1230

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h : 900

Del. quantity : 131.0...133.0

1000 : (129.0...135.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

## RATED SPEED



1st version  
Control lever  
position degrees: 41...49

Testing:

1st rack travel in: 12.50  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1400  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 9...17  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.9

Testing:

Speed rpm : 100  
Minimum rack travel: 7.80  
Speed rpm : 250  
Rack travel in mm : 5.90...6.00

CONSTANT REGULATION

Speed rpm : 260...460

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : 430  
Rack travel mm : 11.80...11.90

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.20...11.30  
2nd pressure hPa : 580  
Rack travel in m: 12.80...13.10  
3rd pressure hPa : 900  
Rack travel in m: 13.50...13.60

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 130.5...134.5  
1000 s: (128.5...136.5)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 79.5...81.5  
1000 s: (77.5...83.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.90...6.00  
Del. quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 6,5 L 2  
 Edition : 25.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 546 013  
 Injection pump  
 Pump designation : PE6MW100/72ORS1157  
 EP type number : 0 413 506 103  
 Governor  
 Governor design. : RQ250/1200MW94  
 Governor no. : 0 420 082 027

Customer-spec. information  
 Customer : STEYR

Engine : WD 612.63

1st version kW : 130.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 : Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.90...12.00

Del. quantity cm<sup>3</sup>/ : 10.3...10.5

100 s: (10.1...10.7)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 6.1...6.2

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s: (1.0...1.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320  
 travel mm : 8.90...9.30

2nd speed rpm : 1250  
 travel mm : 6.20...6.40

3rd speed rpm : 375  
 travel mm : 4.00...4.60

4th speed rpm : 250  
 travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 700

Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

Del. quantity : 103.0...105.0

1000 : (101.0...107.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 31...39

Setting point:  
Speed rpm : 700  
Rack travel in mm : 16.0

Testing:  
1st rack travel in: 10.90  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1295...1325  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6.1

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 250  
Rack travel in mm : 6.10...6.20  
Speed rpm : 550  
Maximum rack travel: 1.00

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 11.20...11.30

Measurement  
Speed 1/min : 500  
2nd pressure hPa : 350  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 700  
Rack travel in m: 11.90...12.00

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 700  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 98.0...102.0  
1000 s: (96.0...104.0)

Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 78.5...80.5  
1000 s: (76.5...82.5)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.90  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.10...6.20  
Del. quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : STE 6,5 L 3  
 Edition : 25.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 403 546 014  
 Injection pump  
 Pump designation : PE6MW100/72ORS1157  
 EP type number : 0 413 506 103  
 Governor  
 Governor design. : RQ250/1200MW94-1  
 Governor no. : 0 420 082 028

Customer-spec. information  
 Customer : STEYR

Engine : WD 612.65

1st version kW : 154.0  
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 : Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 30...32

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)  
 Rack travel in mm : 9.00...12.00

F18

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 13.10...13.20

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s : (12.4...13.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 250.0

Rack travel in mm : 5.8...5.9

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s : (1.0...1.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1320  
 travel mm : 8.90...9.30

2nd speed rpm : 1250  
 travel mm : 6.20...6.40

3rd speed rpm : 375  
 travel mm : 4.00...4.60

4th speed rpm : 250  
 travel mm : 1.50...1.90

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -2

Speed rpm : 700  
 Rack travel in mm : 15.60...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1200  
 Aneroid pressure h : 700  
 Del. quantity : 126.0...128.0  
 1000 : (124.0...130.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

RATED SPEED

1st version  
Control lever  
position degrees: 34...42

Setting point:  
Speed rpm : 700  
Rack travel in mm : 16.0

Testing:  
1st rack travel in: 12.10  
Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1310...1340  
4th rack travel in: 1450  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.50  
Speed rpm : 250  
Rack travel in mm : 5.80...5.90

CONSTANT REGULATION  
Speed rpm : 260...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 300  
Rack travel mm : 11.50...11.60

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.70...10.80  
2nd pressure hPa : 440  
Rack travel in m: 12.40...12.70  
3rd pressure hPa : 700  
Rack travel in m: 13.10...13.20

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

F19

Aneroid pressure h: 700  
Speed rpm : 700  
Del.quantity cm3/ : 123.0...127.0  
1000 s: (121.0...129.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 72.0...74.0  
1000 s: (70.0...76.0)

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.10  
Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...140.0  
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250  
Rack travel in mm : 5.80...5.90  
Del.quantity cm3/ : 12.0...16.0  
1000 s: (10.0...18.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : LEY 6,7 B  
 Edition : 25.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 403 546 015

Injection pump  
 Pump designation : PE6MW90/32ORS1158  
 EP type number : 0 413 596 102  
 Governor  
 Governor design. : RQV200...1300MW95  
 Governor no. : 0 420 083 150

Customer-spec. information  
 Customer : BRITISH-LEYLAND

Engine : 402

1st version kW : 103.0  
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.30...3.40  
 : (3.25...3.45)  
 Rack travel in mm : 9.00...12.00

F20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.30...10.40

Del. quantity cm<sup>3</sup>/ : 8.4...8.6

100 s: (8.2...8.8)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

2nd speed rpm : 200.0

Rack travel in mm : 8.0...8.1

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm<sup>3</sup> : 0.3

100 s: (0.5)

(B) Setting of injection pump  
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1340  
 travel mm : 10.20...10.40

2nd speed rpm : 1430  
 travel mm : 11.30...11.70

3rd speed rpm : 200  
 travel mm : 0.80...1.20

4th speed rpm : 500  
 travel mm : 3.40...4.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300  
 Del. quantity : 84.0...86.0

1000 : (82.0...88.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever  
position degrees: 45...53

Testing:  
1st rack travel in: 9.30  
Speed rpm : 1340...1350  
2nd rack travel in: 4.00  
Speed rpm : 1400...1430  
4th rack travel in: 1490  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 200  
Rack travel in mm : 8.0

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 200  
Rack travel in mm : 8.00...8.10

#### CONSTANT REGULATION

Speed rpm : 290...360

#### START CUT-OUT

Speed 1/min : 150 (170)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 59.0...63.0  
1000 s: (57.0...65.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.30  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 95.0...105.0  
1000 s: (92.0...108.0)

#### LOW IDLE

Speed rpm : 200

F21

Rack travel in mm : 8.00...8.10  
Del. quantity cm<sup>3</sup>/ : 18.0...22.0  
1000 s: (15.5...24.5)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : KHD 13,4 D2  
 Edition : 25.03.88  
 Replaces : 11.85  
 Test oil : ISO-4113

Combination no. : 0 403 548 012

Injection pump  
 Pump designation : PE8MW100/720LS1118  
 EP type number : 0 413 508 102  
 Governor  
 Governor design. : RQ300...1150MW63-1  
 Governor no. : 0 420 082 017

Customer-spec. information  
 Customer : KHD

Engine : BF8LS13

1st version kW : 225.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

F22

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1150

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 13.6...13.8

100 s : (13.4...14.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.1...7.2

Del. quantity cm<sup>3</sup>/ : 1.8...2.2

100 s : (1.6...2.4)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1275  
 travel mm : 9.10...9.50

2nd speed rpm : 1200  
 travel mm : 6.70...6.90

3rd speed rpm : 390  
 travel mm : 4.10...4.70

4th speed rpm : 300  
 travel mm : 1.30...1.70

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -2

Speed rpm : 650

Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1150

Aneroid pressure h: 900

Del. quantity : 136.0...138.0

1000 : (134.0...140.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**



1st version  
Control lever  
position degrees: 30...38

Setting point:  
Speed rpm : 650  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1340  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 8...16  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 7.1

Testing:  
Speed rpm : 100  
Minimum rack trave: 8.50  
Speed rpm : 300  
Rack travel in mm : 7.10...7.20

CONSTANT REGULATION  
Speed rpm : 330...400

TORQUE CONTROL  
Dimension a mm : 0.40  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 650  
Rack travel in m: 13.30...13.40  
3rd speed rpm : 800  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 380  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...11.90  
2nd pressure hPa : 480  
Rack travel in m: 12.80...13.10

3rd pressure hPa : 900  
Rack travel in m: 13.30...13.40

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 650  
Del.quantity cm3/ : 144.0...146.0  
1000 s: (142.0...148.0)  
Spread cm3 : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del.quantity cm3/ : 107.0...109.0  
1000 s: (105.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140.0...150.0  
1000 s: (137.0...153.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 7.10...7.20  
Del.quantity cm3/ : 18.0...22.0  
1000 s: (16.0...24.0)  
Spread cm3 : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : KHD 13,4 D1  
 Edition : 25.03.88  
 Replaces : 12.09.86  
 Test oil : ISO-4113

Combination no. : 0 403 548 013

Injection pump  
 Pump designation : PE8MW100/720LS1117  
 EP type number : 0 413 508 101  
 Governor  
 Governor design. : RQV425...900MW66  
 Governor no. : 0 420 083 097

Customer-spec. information  
 Customer : KHD

Engine : F 8L 513 OPT.

1st version KW : 153.0  
 Rated speed : 1800

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 900

Rack travel in mm : 12.50...12.60

Del. quantity cm<sup>3</sup>/ : 10.7...10.9

100 s : (10.5...11.1)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

2nd speed rpm : 425.0

Rack travel in mm : 7.4...7.5

Del. quantity cm<sup>3</sup>/ : 1.3...1.7

100 s : (1.1...2.0)

Spread cm<sup>3</sup> : 0.3

100 s : (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 940  
 travel mm : 8.70...8.90

2nd speed rpm : 990  
 travel mm : 9.40...10.00

3rd speed rpm : 550  
 travel mm : 3.20...4.00

4th speed rpm : 425  
 travel mm : 1.40...2.20

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 900

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 900  
 Del. quantity : 107.0...109.0

1000 : (105.0...111.0)

Spread cm<sup>3</sup> : 3.50

1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 51...59

Testing:

1st rack travel in: 11.50  
Speed rpm : 940...950  
2nd rack travel in: 4.50  
Speed rpm : 1000...1030  
4th rack travel in: 1150  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 7.4

Testing:

Speed rpm : 100  
Minimum rack travel: 9.00  
Speed rpm : 425  
Rack travel in mm : 7.40...7.50

CONSTANT REGULATION

Speed rpm : 450...750

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 900  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 675  
Rack travel in m: 13.00...13.10  
3rd speed rpm : 775  
Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 675  
Del. quantity cm<sup>3</sup>/ : 111.5...113.5  
1000 s: (109.5...115.5)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

F25

Del. quantity cm<sup>3</sup>/ : 130.0...140.0  
1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 425  
Rack travel in mm : 7.40...7.50  
Del. quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (11.0...20.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : KHD 13,4 D8  
 Edition : 25.03.88  
 Replaces : 13.05.87  
 Test oil : ISO-4113

Combination no. : 0 403 548 021

Injection pump  
 Pump designation : PE8MM100/72OLS1118  
 EP type number : 0 413 508 102  
 Governor  
 Governor design. : RQV300...115DMW56-2  
 Governor no. : 0 420 083 127

Customer-spec. information  
 Customer : KHD

Engine : BF 8L 513

1st version kW : 235.0  
 Rated speed : 2300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 740 014

Outside diameter  
 : Wall thickness  
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 30...32

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 7- 2- 6- 5-  
 4- 3

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1150  
 -----  
 Rack travel in mm : 12.50...12.60  
 -----  
 Del. quantity cm<sup>3</sup>/ : 13.6...13.8  
 -----  
 100 s: (13.4...14.0)  
 -----  
 Spread cm<sup>3</sup> : 0.3  
 -----  
 100 s: (0.6)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 6.8...6.9  
 Del. quantity cm<sup>3</sup>/ : 1.3...1.7  
 100 s: (1.1...1.9)  
 Spread cm<sup>3</sup> : 0.3  
 100 s: (0.5)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 1300  
 travel mm : 9.80...10.20  
 2nd speed rpm : 1200  
 travel mm : 8.70...8.90  
 3rd speed rpm : 600  
 travel mm : 3.90...4.50  
 4th speed rpm : 300  
 travel mm : 1.10...1.50

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1200  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1150  
 Aneroid pressure h: 900  
 Del. quantity : 136.0...138.0  
 1000 : (134.0...140.0)  
 Spread cm<sup>3</sup> : 3.50  
 1000 : (6.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1190...1200  
2nd rack travel in: 4.00  
Speed rpm : 1295...1325  
4th rack travel in: 1370  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.8

Testing:  
Speed rpm : 100  
Minimum rack travel: 8.50  
Speed rpm : 300  
Rack travel in mm : 6.80...6.90

CONSTANT REGULATION  
Speed rpm : 330...400

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1150  
Rack travel in m: 12.50...12.60  
2nd speed rpm : 650  
Rack travel in m: 13.30...13.40  
3rd speed rpm : 900  
Rack travel in m: 12.90...13.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 300  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...11.90  
2nd pressure hPa : 400  
Rack travel in m: 13.00...13.30  
3rd pressure hPa : 900  
Rack travel in m: 13.30...13.40

START CUT-OUT

Speed 1/min : 220 (250)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 144.0...146.0  
1000 s: (142.0...148.0)  
Spread cm<sup>3</sup> : 5.00  
1000 s: (7.0)  
Aneroid pressure h: -  
Speed rpm : 450  
Del. quantity cm<sup>3</sup>/ : 107.0...109.0  
1000 s: (105.0...111.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...150.0  
1000 s: (137.0...153.0)

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.80...6.90  
Del. quantity cm<sup>3</sup>/ : 13.0...17.0  
1000 s: (11.0...19.0)  
Spread cm<sup>3</sup> : 3.50  
1000 s: (5.50)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 N 16  
Edition : 03.03.88  
Replaces : -  
Test oil : ISO 4113  
Combination no. : 9 400 084 240  
Injection pump  
Pump designation : PES6A800410RS2293  
Governor  
Governor design. : RQV300...1425AB842L

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 352 A

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
: (2,10...2,30)  
Rack travel in mm : 9,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

F28

1st speed rpm : 1000  
-----  
Rack travel in mm : 9,00...9,10  
-----  
Del. quantity cm<sup>3</sup>/ : 4,50...5,00  
-----  
100 s : (4,25...5,25)  
-----  
Spread cm<sup>3</sup> : 0,40  
-----  
100 s : (-)  
-----

2nd speed rpm : 1000  
Rack travel in mm : 14,90...15,10  
Del. quantity cm<sup>3</sup>/ : 7,3...8,2  
100 s : (6,95...8,55)  
-----  
Spread cm<sup>3</sup> : 0,40  
100 s : (0,55)  
-----  
3rd speed rpm : 200  
Rack travel in mm : 8,90...9,10  
Del. quantity cm<sup>3</sup>/ : 2,05...2,85  
100 s : (1,7...3,2)  
-----  
Spread cm<sup>3</sup> : 0,25  
100 s : (0,45)

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Del. quantity : 67,0...69,0  
1000 : (65,5...70,5)  
-----  
Spread cm<sup>3</sup> : 3,0  
1000 : (5,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 17,70  
Speed rpm : 1425  
2nd rack travel in: 16,70  
Speed rpm : 1465...1475  
3rd rack travel in: 1,50...8,00  
Speed rpm : 1650  
4th rack travel in: 1780  
Speed rpm : 0,00...1,00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 6,60  
Speed rpm : 250  
Rack travel in mm : 5,50...7,00  
Rack travel in mm : 5,00

Speed rpm : 350  
Speed rpm : 770  
Maximum rack travel: 1,00

START CUT-OUT

Speed 1/min : 400

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1400  
Del. quantity cm<sup>3</sup>/ : 53,5...56,5  
1000 s: (51,0...59,0)  
Spread cm<sup>3</sup> : 3,0  
1000 s: (5,0)

BREAKAWAY

1st version

Speed rpm : 1425...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 13,70...14,30

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 i 9  
Edition : 01.03.88  
Replaces : -  
Test oil : ISO 4113  
  
Combination no. : 9 400 084 241  
  
Injection pump  
Pump designation : PES6A80D41ORS2085Y  
Governor  
Governor design. : RSV575...1100A1B629D  
L

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 352

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,15...2,25  
: (2,10...2,30)

Rack travel in mm : 9,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

G02

1st speed rpm : 1000

Rack travel in mm : 9,00...9,10

Del. quantity cm<sup>3</sup>/ : 4,35...4,85

100 s : (4,15...5,05)

Spread cm<sup>3</sup> : 0,40

100 s : (-)

2nd speed rpm : 1000

Rack travel in mm : 14,90...15,10

Del. quantity cm<sup>3</sup>/ : 10,25...11,65

100 s : (9,95...11,95)

Spread cm<sup>3</sup> : 0,35

100 s : (0,45)

3rd speed rpm : 200

Rack travel in mm : 8,90...9,10

Del. quantity cm<sup>3</sup>/ : 2,45...3,45

100 s : (2,2...3,7)

Spread cm<sup>3</sup> : 0,20

100 s : (0,35)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,3...1,0

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1080

Del. quantity : 53,5...54,5

1000 : (52,0...56,0)

Spread cm<sup>3</sup> : 2,5

1000 : (4,0)

## RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 16,00

Speed rpm : 1140...1150

3rd rack travel in: 4,20...7,40

Speed rpm : 1190

4th rack travel in: 1340

Speed rpm : 0,30...1,00

## LOW IDLE 1

Control lever



position degrees: 28...36  
Setting point w/out bumper spring  
Speed rpm : 575  
Rack travel in mm : 7,00

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 575  
Rack travel in mm : 6,70...7,30  
Rack travel in mm : 4,00  
Speed rpm : 650  
Speed rpm : 800  
Maximum rack trave: 1,0

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1080  
Rack travel in m: -  
2nd speed rpm : 900  
Rack travel in m: +(0,10...0,30)  
3rd speed rpm : 650  
Rack travel in m: +(0,30...0,50)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del.quantity cm3/ : 53,0...55,0  
1000 s: (51,0...57,0)  
Spread cm3 : 3,5  
1000 s: (4,5)  
Speed rpm : 500  
Del.quantity cm3/ : 48,5...50,5  
1000 s: (46,5...52,5)  
Spread cm3 : 3,5  
1000 s: (4,5)

#### BREAKAWAY

##### 1st version

Speed rpm : 1110...1130

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 14,20...14,80

#### LOW IDLE

Speed rpm : 575  
Rack travel in mm : 6,90...7,10

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 P  
Edition : 07.03.88  
Replaces : -  
Test oil : ISO 4113  
Combination no. : 9 400 087 230  
Injection pump  
Pump designation : PE6P100A72ORS15  
Governor  
Governor design. : RSV350...1000P1/400R

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 355

1st version kW : 161.9  
Rated speed : 2000

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,80...2,90  
: (2,75...2,95)

Rack travel in mm : 9,00  
Firing order : 1-5-3-6-2-4

Phasing : 1-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 9,00...9,10

Del. quantity cm<sup>3</sup>/ : 5,9...6,7

100 s : (5,6...7,0)

Spread cm<sup>3</sup> : 0,5

100 s : (-)

2nd speed rpm : 1000

Rack travel in mm : 11,90...12,10

Del. quantity cm<sup>3</sup>/ : 9,3...10,3

100 s : (8,9...10,7)

Spread cm<sup>3</sup> : 0,5

100 s : (0,7)

3rd speed rpm : 200

Rack travel in mm : 8,90...9,10

Del. quantity cm<sup>3</sup>/ : 2,5...3,3

100 s : (2,2...3,7)

Spread cm<sup>3</sup> : 0,35

100 s : (0,55)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,3...1,0

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 980

Del. quantity : 101,0...103,0

1000 : (97,0...107,0)

Spread cm<sup>3</sup> : 5,0

1000 : (7,0)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 16,00

Speed rpm : 1040...1050

3rd rack travel in: 3,60...4,00

Speed rpm : 1090

4th rack travel in: 1200

Speed rpm : 0,00...1,50

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7,50

Testing:

Speed rpm : 100

Minimum rack trave: 19,00

Speed rpm : 350

Rack travel in mm : 7,30...7,70

Rack travel in mm : 2,40

Speed rpm : 550

Speed rpm : 660

Maximum rack trave: 1,50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 980

Rack travel in m: -

2nd speed rpm : 450

Rack travel in m: -

3rd speed rpm : 350

Rack travel in m: +(1,20...1,80)

BREAKAWAY

1st version

Speed rpm : 1010...1030

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140,0...160,0

Remarks:

APPLICATION

Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 P1  
Edition : 07.03.88  
Replaces : -  
Test oil : ISO 4113  
  
Combination no. : 9 400 087 231  
  
Injection pump  
Pump designation : PE6P100A72ORS15  
Governor  
Governor design. : RSV350...900P7/402R

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 355

1st version kW : 136.2  
Rated speed : 1800

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,8...2,9  
                  : (2,85...2,95)  
Rack travel in mm : 9,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
-----  
Rack travel in mm : 9,00...9,10  
-----  
Del. quantity cm<sup>3</sup>/ : 6,0...6,8  
-----  
100 s : (5,7...7,1)  
-----  
Spread cm<sup>3</sup> : 0,5  
-----  
100 s : (-)  
-----  
2nd speed rpm : 1000  
Rack travel in mm : 11,90...12,10  
Del. quantity cm<sup>3</sup>/ : 9,4...10,4  
100 s : (9,0...10,8)  
-----  
Spread cm<sup>3</sup> : 0,5  
100 s : (0,7)  
-----  
3rd speed rpm : 200  
Rack travel in mm : 8,90...9,10  
Del. quantity cm<sup>3</sup>/ : 2,7...3,3  
100 s : (2,3...3,7)  
-----  
Spread cm<sup>3</sup> : 0,35  
100 s : (0,55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,3...1,0

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 880  
Del. quantity : 98,0...100,0  
1000 : (95,0...103,0)  
-----  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 16,00  
Speed rpm : 940...950  
3rd rack travel in: 6,20...7,80  
Speed rpm : 950  
4th rack travel in: 1030  
Speed rpm : 0,00...1,00

LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 7,50

Testing:

Speed rpm : 100

Minimum rack trave: 19,00

Speed rpm : 350

Rack travel in mm : 7,20...7,80

Rack travel in mm : 400

Speed rpm : 2,8...4,8

Speed rpm : 480

Maximum rack trave: 1,50

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 880

Rack travel in m: -

2nd speed rpm : 500

Rack travel in m: -

3rd speed rpm : 380

Rack travel in m: +(1,20...1,80)

BREAKAWAY

1st version

Speed rpm : 910...930

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 140,0...160,0

LOW IDLE

Speed rpm : 350

Rack travel in mm : 7,40...7,60

Remarks:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 H1  
Edition : 07.03.88  
Replaces : -  
Test oil : ISO 4113  
Combination no. : 9 400 087 239  
Injection pump  
Pump designation : PESP100A72ORS265  
Governor  
Governor design. : RSV300...1100PA281R

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 355/5

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,8...2,9  
: (2,75...2,95)

Rack travel in mm : 9,00  
Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

G08

1st speed rpm : 1000  
-----  
Rack travel in mm : 9,00...9,10  
-----  
Del. quantity cm<sup>3</sup>/ : 6,0...6,8  
-----  
100 s : (5,7...7,1)  
-----  
Spread cm<sup>3</sup> : 0,35  
-----  
100 s : (0,6)  
-----

2nd speed rpm : 1000  
Rack travel in mm : 11,90...12,10  
Del. quantity cm<sup>3</sup>/ : 9,4...10,4  
100 s : (9,0...10,8)  
Spread cm<sup>3</sup> : 0,5  
100 s : (0,7)  
3rd speed rpm : 200  
Rack travel in mm : 8,90...9,10  
Del. quantity cm<sup>3</sup>/ : 2,7...3,3  
100 s : (2,3...3,7)  
Spread cm<sup>3</sup> : 0,35  
100 s : (0,55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,3...1,0

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1070  
Del. quantity : 118,5...120,5  
1000 : (116,5...122,5)  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 64...72

Testing:  
1st rack travel in: 16,00  
Speed rpm : 1140...1150  
2nd rack travel in: 3,40  
Speed rpm : 1215...1245  
4th rack travel in: 1300  
Speed rpm : 0,00...1,00

## LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:

Speed rpm : 150  
Minimum rack trave: 8,60  
Speed rpm : 300  
Rack travel in mm : 4,60...7,00  
Rack travel in mm : 1,70  
Speed rpm : 530...570

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100  
Rack travel in m: 8,20...8,60

START CUT-OUT

Speed 1/min : 180 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 450  
Del.quantity cm<sup>3</sup>/ : 101,0...105,0  
1000 s: (99,0...107,0)  
Spread cm<sup>3</sup> : 5,0  
1000 s: (7,0)

BREAKAWAY

1st version

Speed rpm : 1125...1145

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 140,0...160,0

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,8 Q  
Edition : 08.03.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 087 241  
Injection pump  
Pump designation : PE6P100A72ORS15V  
Governor  
Governor design. : RQ250/1100PA269R

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 355

1st version kW : 147.2  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Prestroke mm : 2,8...2,9  
                  : (2,75...2,95)  
Rack travel in mm : 9,00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
-----  
Rack travel in mm : 9,00...9,10  
-----  
Del.quantity cm<sup>3</sup>/ : 6,0...6,8  
-----  
100 s : (5,7...7,1)  
-----  
Spread cm<sup>3</sup> : 0,5  
-----  
100 s : (-)  
-----  
2nd speed rpm : 1000  
Rack travel in mm : 11,90...12,10  
Del.quantity cm<sup>3</sup>/ : 9,4...10,4  
100 s : (9,0...10,8)  
Spread cm<sup>3</sup> : 0,5  
100 s : (0,7)  
-----  
3rd speed rpm : 200  
Rack travel in mm : 8,90...9,10  
Del.quantity cm<sup>3</sup>/ : 2,7...3,3  
100 s : (2,3...3,7)  
Spread cm<sup>3</sup> : 0,35  
100 s : (0,55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 600  
Rack travel in mm : 15,70...16,30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1070  
Del.quantity : 99,0...101,0  
1000 : (96,0...104,0)  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 16,0

Testing:  
1st rack travel in: 15,0  
Speed rpm : 1145...1160  
2nd rack travel in: 3,50  
Speed rpm : 1185...1215  
4th rack travel in: 1250  
Speed rpm : 0,00...1,00

## LOW IDLE 1



Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6,40

Testing:

Speed rpm : 200  
Minimum rack trave: 6,70  
Speed rpm : 300  
Rack travel in mm : 4,80...6,70  
Rack travel in mm : 3,10  
Speed rpm : 380...420  
Speed rpm : 500  
Maximum rack trave: 1,00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 450  
Del.quantity cm3/ : 78,0...82,0  
1000 s: (76,0...84,0)  
Spread cm3 : 5,0  
1000 s: (7,0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15,00  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140,0...160,0

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 A 1  
Edition : 08.03.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 087 243  
Injection pump  
Pump designation : PE5P100A72ORS265Y  
Governor  
Governor design. : RQ250/1100PA269R

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 355-5

1st version kW : 125.1  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,8...2,9  
: (2,75...2,95)  
Rack travel in mm : 9,00  
Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1000  
-----  
Rack travel in mm : 9,00...9,10  
-----  
Del. quantity cm<sup>3</sup>/ : 6,1...6,7  
-----  
100 s : (5,8...7,0)  
-----  
Spread cm<sup>3</sup> : 0,5  
-----  
100 s : (-)  
-----  
2nd speed rpm : 1000  
Rack travel in mm : 11,90...12,10  
Del. quantity cm<sup>3</sup>/ : 9,5...10,3  
100 s : (9,1...10,7)  
-----  
Spread cm<sup>3</sup> : 0,5  
100 s : (0,7)  
-----  
3rd speed rpm : 200  
Rack travel in mm : 8,90...9,10  
Del. quantity cm<sup>3</sup>/ : 2,5...3,3  
100 s : (2,1...3,7)  
-----  
Spread cm<sup>3</sup> : 0,35  
100 s : (0,55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 600  
Rack travel in mm : 15,70...16,30

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1090  
Del. quantity : 102,0...104,0  
1000 : (99,0...107,0)  
-----  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 16,0

Testing:  
1st rack travel in: 15,00  
Speed rpm : 1145...1160  
2nd rack travel in: 3,50  
Speed rpm : 1185...1215  
4th rack travel in: 1250  
Speed rpm : 0,00...1,00

## LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 6,40

Testing:

Speed rpm : 200  
Minimum rack trave: 6,70  
Speed rpm : 300  
Rack travel in mm : 4,80...6,70  
Rack travel in mm : 400  
Speed rpm : 3,10  
Speed rpm : 500  
Maximum rack trave: 1,00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 450  
Del.quantity cm3/ : 82,0...86,0  
1000 s: (78,0...90,0)  
Spread cm3 : 5,0  
1000 s: (7,0)

RACK STOP ADJUSTMENT

Speed rpm : 500

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 15,00  
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 140,0...160,0

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 H  
Edition : 09.03.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 087 260  
Injection pump  
Pump designation : PE5P100A720RS265  
Governor  
Governor design. : RQV300...1100PA465

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 355-5

1st version kW : 142  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,8...2,9  
                  : (2,75...2,95)  
Rack travel in mm : 12,8  
Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1100  
-----  
Rack travel in mm : 12,80...12,90  
-----  
Del. quantity cm<sup>3</sup>/ : 11,4...11,6  
-----  
100 s : (11,1...11,9)  
-----  
Spread cm<sup>3</sup> : 0,35  
-----  
100 s : (0,6)  
-----  
2nd speed rpm : 300  
Rack travel in mm : 7,3...7,5  
Del. quantity cm<sup>3</sup>/ : 0,9...1,4  
100 s : (0,45...1,85)  
Spread cm<sup>3</sup> : 0,35  
100 s : (0,55)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1100  
travel mm : 8,40  
2nd speed rpm : 800  
travel mm : 5,00...5,40  
3rd speed rpm : 400  
travel mm : 2,00...2,60

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 15,20...17,80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del. quantity : 114,0...116,0  
1000 : (112,0...118,0)  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 64...72

Testing:  
1st rack travel in: 11,80  
Speed rpm : 1440...1450  
2nd rack travel in: 4,00  
Speed rpm : 1230...1260  
4th rack travel in: 1350

Speed rpm : 0,00...1,00

#### LOW IDLE 1

Control lever  
position degrees: 8...16

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7,50  
Speed rpm : 300  
Rack travel in mm : 5,90...6,10  
Rack travel in mm : 2,00  
Speed rpm : 510...570  
Speed rpm : 350  
Maximum rack travel: \*

#### START CUT-OUT

Speed 1/min : 180 (250)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 450  
Del. quantity cm<sup>3</sup>/ : 92,0...96,0  
1000 s: (90,0...98,0)  
Spread cm<sup>3</sup> : 5,0  
1000 s: (7,0)

#### BREAKAWAY

##### 1st version

Speed rpm : 1140...1150

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140,0...160,0

#### Remarks:

\* = Pull back control level to stop position with pump running. Control-rod travel must then be 0 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : FIA 13,8 A9  
 Edition : 08.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 262  
 Injection pump  
 Pump designation : PE6P120A72ORS167Z  
 Governor  
 Governor design. : RQ225/1000PA118R

Customer-spec. information  
 Customer : FIAT

Engine : 8210

1st version kW : 169  
 Rated speed : 2000

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
 assembly : 0 681 443 022

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter  
 x Wall thickness  
 x Length mm : 8,00x2,00x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2,0...2,1  
 : (1,95...2,15)  
 Rack travel in mm : 10,95  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

G16

## BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 10,95...10,15

Del. quantity cm<sup>3</sup>/ : 18,1...18,3

100 s : (17,6...18,8)

Spread cm<sup>3</sup> : 0,5

100 s : (0,9)

2nd speed rpm : 225

Rack travel in mm : 6,90...7,10

Del. quantity cm<sup>3</sup>/ : 0,8...1,4

100 s : (0,2...2,0)

Spread cm<sup>3</sup> : 0,5

100 s : (0,8)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15,60...16,40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 181,0...183,0

1000 : (179,0...186,0)

Spread cm<sup>3</sup> : 5,0

1000 : (9,0)

## RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 16,0

Testing:

1st rack travel in: 10,00

Speed rpm : 1045...1060

2nd rack travel in: 4,00

Speed rpm : 1090...1120

4th rack travel in: 1160

Speed rpm : 0,00...1,00

## LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225

Rack travel in mm : 5,40

Testing:

Speed rpm : 1000

Minimum rack trave: 6,90  
Speed rpm : 225  
Rack travel in mm : 5,30...5,50  
Rack travel in mm : 2,00  
Speed rpm : 310...350  
Speed rpm : 380  
Maximum rack trave: 1,00

#### RACK STOP ADJUSTMENT

Speed rpm : 550

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10,00  
Speed rpm : 1045...1060

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 270...290  
Rack travel in mm : 16,70...17,10

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 I  
Edition : 08.03.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 0897 268  
Injection pump  
Pump designation : PES100A72ORS265  
Governor  
Governor design. : RSV350...100OP1/40OR

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 355-5

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : i 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Prestroke mm : 2,8...2,9  
                  : (2,75...2,95)  
Rack travel in mm : 11,25  
Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

G18

1st speed rpm : 1000  
-----  
Rack travel in mm : 11,25...11,35  
-----  
Del. quantity cm<sup>3</sup>/ : 9,25...9,45  
-----  
100 s : (8,95...9,75)  
-----  
Spread cm<sup>3</sup> : 0,3  
-----  
100 s : (0,6)  
-----  
2nd speed rpm : 350  
Rack travel in mm : 7,40...7,60  
Del. quantity cm<sup>3</sup>/ : 1,4...1,9  
100 s : (0,95...1,35)  
Spread cm<sup>3</sup> : 0,3  
100 s : (0,5)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0,3...1,0

Governor spring pre-tension  
Click setting x : 3,5

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del. quantity : 92,5...94,5  
1000 : (90,5...96,5)  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 44...52

Testing:  
1st rack travel in: 10,30  
Speed rpm : 1040...1050  
2nd rack travel in: 4,00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7,00  
Speed rpm : 350  
Rack travel in mm : 7,40...7,60  
Rack travel in mm : 2,00



Speed rpm : 540...600

#### TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000

Rack travel in m: 11,25...11,35

2nd speed rpm : 450

Rack travel in m: 11,25...11,35

3rd speed rpm : 350

Rack travel in m: 12,55...13,05

#### BREAKAWAY

1st version

Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 140,0...160,0

#### LOW IDLE

Speed rpm : 350

Rack travel in mm : 6,90...7,10

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : SCA 11,0 Y3  
Edition : 08.03.88  
Replaces : -  
Test oil : ISO 4113  
Combination no. : 9 400 087 296  
Injection pump  
Pump designation : PE6P110A72ORS3115  
Governor  
Governor design. : RSV350...900P7/481

Customer-spec. information  
Customer : SAAB-SCANIA

Engine : DN-11

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00X1,50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Prestroke mm : 3,3...3,4  
: (3,25...3,45)  
Rack travel in mm : 11,80  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 11,80...11,90

Del. quantity cm<sup>3</sup>/ : 11,7...11,9

100 s : (11,3...12,3)

Spread cm<sup>3</sup> : 0,5

100 s : (0,8)

2nd speed rpm : 350

Rack travel in mm : 4,5...4,7

Del. quantity cm<sup>3</sup>/ : 2,0...2,4

100 s : (1,5...2,9)

Spread cm<sup>3</sup> : 0,2

100 s : (0,4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,3...1,0

Governor spring pre-tension

Click setting x : 5,5

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del. quantity : 117,0...119,0

1000 : (115,0...121,0)

Spread cm<sup>3</sup> : 4,5

1000 : (7,5)

## RATED SPEED

1st version

Control lever

position degrees: 52...60

Testing:

1st rack travel in: 10,80

Speed rpm : 940...950

2nd rack travel in: 4,00

Speed rpm : 965...995

4th rack travel in: 1100

Speed rpm : 0,3...1,7

## LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rpm : 350

Rack travel in mm : 4,10

Speed rpm : 350

Rack travel in mm : 4,50...4,70

Rack travel in mm : 2,00

Speed rpm : 430...480

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 118,5...121,5  
1000 s: (116,0...123,0)

Spread cm<sup>3</sup> : 6,0  
1000 s: (8,5)

BREAKAWAY

1st version

Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 230,0...280,0

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4,00...4,20

Remarks:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 F 1  
Edition : 08.03.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 9 400 087 333

Injection pump  
Pump designation : PESP100A72ORS491  
Governor  
Governor design. : RQ300/1100PA269-3

Customer-spec. information  
Customer : DAIMLER-BENZ-BRAS.

Engine : OM 355-5

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Prestroke mm : 3,5...3,6  
                  : (3,45...3,65)

Rack travel in mm : 12,50

Firing order : 1-2-4-5-3

Phasing : 0-72-144-216-288

Tolerance + - ° : 0,5(0,75)

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12,50...12,60

Del. quantity cm<sup>3</sup>/ : 11,75...11,95

100 s : (11,45...12,25)

Spread cm<sup>3</sup> : 0,35

100 s : (0,6)

2nd speed rpm : 300

Rack travel in mm : 7,4...7,6

Del. quantity cm<sup>3</sup>/ : 0,9...1,3

100 s : 0,45...1,75)

Spread cm<sup>3</sup> : 0,35

100 s : (0,55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 600

Rack travel in mm : 13,40...13,90

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Del. quantity : 117,5...119,5

1000 : (115,5...121,5)

Spread cm<sup>3</sup> : 3,5

1000 : (6,0)

## RATED SPEED

### 1st version

Setting point:  
Speed rpm : 600

Rack travel in mm : 13,7

### Testing:

1st rack travel in: 11,50

Speed rpm : 1145...1160

2nd rack travel in: 4,00

Speed rpm : 1190...1220

4th rack travel in: 1300

Speed rpm : 0,00...1,50

### LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 7,50

### Testing:

Speed rpm : 100

Minimum rack travel: 9,50

Speed rpm : 300

Rack travel in mm : 7,40...7,60

Rack travel in mm : 2,00  
Speed rpm : 370...410

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 102,5...105,5  
1000 s: (100,0...108,0)  
Spread cm<sup>3</sup> : 5,0  
1000 s: (7,0)

#### RACK STOP ADJUSTMENT

Speed rpm : 500

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11,50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 150,0...170,0  
Rack travel in mm : 17,5...18,5

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 7,0 G 1  
Edition : 08.03.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 9 400 087 341  
Injection pump  
Pump designation : PES4P100A720LS501  
Governor  
Governor design. : RQV350...1000PA798

Customer-spec. information  
Customer : CATERPILLAR

Engine : 3304 DIT

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3,95...4,05  
                  : (3,9...4,1)  
Rack travel in mm : 8,70  
Firing order : 1-3-4-2

Phasing : 0-90-180-270  
Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

G24

1st speed rpm : 1000  
Rack travel in mm : 8,70...8,80  
Del. quantity cm<sup>3</sup>/ : 8,8...8,9  
100 s : (8,5...9,2)  
Spread cm<sup>3</sup> : 0,35  
100 s : (0,6)  
2nd speed rpm : 350  
Rack travel in mm : 6,20...6,40  
Del. quantity cm<sup>3</sup>/ : 1,3...1,7  
100 s : (0,85...2,15)  
Spread cm<sup>3</sup> : 0,35  
100 s : (0,55)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
travel mm : 8,50...8,60  
2nd speed rpm : 900  
travel mm : 6,00...6,20  
3rd speed rpm : 700  
travel mm : 4,50...4,80  
4th speed rpm : 500  
travel mm : 2,90...3,20  
5th speed rpm : 350  
travel mm : 1,30...1,50

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1150  
Rack travel in mm : 15,20...17,80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Del. quantity : 88,0...89,0  
1000 : (85,5...91,5)  
Spread cm<sup>3</sup> : 3,5  
1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 7,70  
Speed rpm : 1030...1040  
2nd rack travel in: 4,00  
Speed rpm : 1075...1105

4th rack travel in: 1250  
Speed rpm : 0,00...1,00

LOW IDLE 1  
Control lever  
position degrees: 8...16

Testing:  
Speed rpm : 100  
Minimum rack trave: 8,00  
Speed rpm : 350  
Rack travel in mm : 4,90...5,10  
Rack travel in mm : 2,00  
Speed rpm : 500...560  
Speed rpm : 370  
Maximum rack trave: \*

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1000  
Rack travel in m: 8,70...8,80  
2nd speed rpm : 870  
Rack travel in m: 8,80...9,00  
3rd speed rpm : 750  
Rack travel in m: 8,90...9,10  
4th speed rpm : 600  
Rack travel in m: 9,00...9,10

#### START CUT-OUT

Speed 1/min : 290 (310)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 91,0...95,0  
1000 s: (89,0...97,0)  
Spread cm<sup>3</sup> : 5,0  
1000 s: (7,0)  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 90,5...94,5  
1000 s: (88,5...96,5)  
Spread cm<sup>3</sup> : 5,0  
1000 s: (7,0)

#### BREAKAWAY

1st version  
Speed rpm : 1030...1040

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 157,0...177,0  
Rack travel in mm : 19,00...21,00

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 4,90...5,10

#### Remarks:

\* = Pull back control level to stop position with pump running. Control-rod travel must then be 0 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : CAT 7,0 G  
Edition : 08.03.88  
Replaces : -  
Test oil : ISO-4113  
  
Combination no. : 9 400 087 347  
  
Injection pump  
Pump designation : PES4P100A720LS501  
Governor  
Governor design. : RQV350...1100PA798-1

Customer-spec. information  
Customer : CATERPILLAR

Engine : 3304 DIT

1st version kW : 88.3  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 012

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 3,95...4,05  
                  : (3,9...4,1)  
Rack travel in mm : 10,40  
Firing order : 1-3-4-2

Phasing : 0-90-180-270  
Tolerance + - ° : 0,50(0,75)

## BASIC SETTING

1st speed rpm : 1100  
-----  
Rack travel in mm : 10,40...10,50  
-----  
Del. quantity cm<sup>3</sup>/ : 12,4...12,5  
-----  
                  100 s : (12,1...12,8)  
-----  
Spread cm<sup>3</sup> : 0,35  
-----  
                  100 s : (0,6)  
-----  
2nd speed rpm : 350  
Rack travel in mm : 6,20...6,40  
Del. quantity cm<sup>3</sup>/ : 1,3...1,7  
                  100 s : (0,85...2,15)  
Spread cm<sup>3</sup> : 0,35  
                  100 s : (0,55)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 1150  
travel mm : 8,50...8,60  
2nd speed rpm : 900  
travel mm : 6,00...6,20  
3rd speed rpm : 700  
travel mm : 4,50...4,80  
4th speed rpm : 500  
travel mm : 2,90...3,20  
5th speed rpm : 350  
travel mm : 1,30...1,50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Del. quantity : 124,0...125,0  
                  1000 : (121,5...127,5)  
Spread cm<sup>3</sup> : 3,5  
                  1000 : (6,0)

## RATED SPEED

1st version  
Control lever  
position degrees: 63...71

Testing:  
1st rack travel in: 9,40  
Speed rpm : 1130...1140  
2nd rack travel in: 4,00  
Speed rpm : 1185...1215  
4th rack travel in: 1320  
Speed rpm : 0,00...1,00



LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rpm : 100

Minimum rack trave: 8,00

Speed rpm : 350

Rack travel in mm : 4,90...5,10

Rack travel in mm : 2,00

Speed rpm : 500...560

Speed rpm : 370

Maximum rack trave: \*

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 120...124

1000 s: (121,5...127,5)

Spread cm<sup>3</sup> : 5,0

1000 s: (7,0)

BREAKAWAY

1st version

Speed rpm : 1130...1140

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm<sup>3</sup>/ : 157,0...177,0

Rack travel in mm : 19,0...21,00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 4,90...5,10

Remarks:

\* = Pull back control level to stop position with pump running. Control-rod travel must then be 0 mm.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : FOR 6,6 e  
 Edition : 10.5.88  
 Replaces : 2.86  
 Test oil : ISO-4113  
 Combination no. : 9 400 087 354  
 Injection pump  
 Pump designation : PES6P110A72ORS3158  
 EP type number : 9 400 087 049  
 Governor  
 Governor design. : RQV350...1300PA787  
 Governor no. : 9 420 080 218

Customer-spec. information  
 Customer : FORD (FTO)

Engine : 6,6 L - TC

1st version kW : 129.2  
 Rated speed : 2600

**TEST BENCH REQUIREMENTS**

Test oil inlet temp, °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 017

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6,00x1,50,600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**  
 Test pressure, bar : 25...27

Prestroke mm : 4.25...4.35  
 : (4.20...4.40)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

**BEGINNING OF DELIVERY DIFFERENCE**

betw. rack trav. m: 9.00...12.00  
 & maximum rack tra: 21.00  
 Difference ° CS : 3.5...4.5

**BASIC SETTING**

1st speed rpm : 1300  
 -----  
 Rack travel in mm : 11.60...1.70  
 -----  
 Del. quantity cm<sup>3</sup>/ : 11.2...11.4  
 -----  
 100 s: (11.0...11.6)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 350  
 Rack travel in mm : 7.70...7.90  
 Del. quantity cm<sup>3</sup>/ : 2.0...2.4  
 100 s: (1.7...2.6)  
 Spread cm<sup>3</sup> : 0.35  
 100 s: (0.55)

(B) Setting of injection pump with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 0.60...1.30  
 2nd speed rpm : 500  
 travel mm : 2.30...2.70  
 3rd speed rpm : 800  
 travel mm : 4.00...4.30  
 4th speed rpm : 1000  
 travel mm : 5.00...5.30  
 5th speed rpm : 1300  
 travel mm : 7.20...7.30

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1350  
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300  
Del.quantity : 112.5...114.5  
1000 : (110.5...165.5)  
Spread cm3 : 5.0  
1000 : (9.0)

RATED SPEED

1st version

Control lever  
position degrees: 58...66

Testing:

1st rack travel in: 10.60  
Speed rpm : 1360...1370  
2nd rack travel in: 4.00  
Speed rpm : 1470...1500  
4th rack travel in: 1600  
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever  
position degrees: 11...19

Testing:

Speed rpm : 100  
Minimum rack trave: 9.50  
Speed rpm : 350  
Rack travel in mm : 7.70...7.90  
Rack travel in mm : 2.00  
Speed rpm : 690...750

CONSTANT REGULATION

Speed rpm : 370...440

TORQUE CONTROL

Dimension a mm : 0.50  
Torque control curve - 1st version  
1st speed rpm : 1300  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 800  
Rack travel in m: 12.10...12.20  
3rd speed rpm : 900  
Rack travel in m: 12.00...12.20  
4th speed rpm : 1050  
Rack travel in m: 11.85...11.90

START CUT-OUT

Speed 1/min : 290 (310)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

H01

Del.quantity cm3/ : 95.5...99.5  
1000 s: (93.5...101.5)  
Spread cm3 : -  
1000 s: (-)  
Speed rpm : 900  
Del.quantity cm3/ : 101.0...106.0  
1000 s: (99.0...108.0)  
Spread cm3 : -  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60  
Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 100.0...120.0  
1000 s: (96.0...124.0)  
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.70...7.90  
Del.quantity cm3/ : 20.0...24.0  
1000 s: (17.5...26.5)  
Spread cm3 : 3.5  
1000 s: (5.5)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 6,6 d  
Edition : 5.5.88  
Replaces : 17.8.87  
Test oil : ISO-4113  
  
Combination no. : 9 400 230 006  
  
Injection pump  
Pump designation : PES6A95D41ORS2559  
Governor  
Governor design. : RSV400...1200A2B2043  
DL

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6404 T

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45  
  
Overflow valve : 1 413 385 007

Inlet press., bar : 1.5

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6,35x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1,85...1,95  
: (1,80...2,00)

Rack travel in mm : 10,50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0,50 (0,75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 8,80

Del. quantity cm<sup>3</sup>/ : 8,4...8,6

100 s: (-)

Spread cm<sup>3</sup> : 0,3

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 5,20

Del. quantity cm<sup>3</sup>/ : 1,1...1,5

100 s: (-)

Spread cm<sup>3</sup> : 0,3

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0,30...0,70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 84,0...86,0

1000 : (81,0...89,0)

## RATED SPEED

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 7,80

Speed rpm : 1245...1255

2nd rack travel in: 4,00

Speed rpm : 1290...1320

4th rack travel in: 1400

Speed rpm : 0,30...1,70

## LOW IDLE 1

Control lever

position degrees: 18...26

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm : 4,70

Testing:

Speed rpm : 100  
Minimum rack travel: 19,00  
Speed rpm : 400  
Rack travel in mm : 5,10...5,30  
Rack travel in mm : 2,00  
Speed rpm : 585...645

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 8,80...8,90  
2nd speed rpm : 800  
Rack travel in m: 9,30...9,50

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 88,0...92,0  
1000 s: (86,0...94,0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 7,80  
Speed rpm : 1245...1255

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160,0...180,0  
1000 s: (-)  
Rack travel in mm : 21,00

HIGH IDLE

1st version

Speed rpm : 1295  
Rack travel in mm : 4,50  
Del. quantity cm<sup>3</sup>/ : 21,8...31,8  
1000 s: (-)

LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5,20  
Del. quantity cm<sup>3</sup>/ : 11,0...15,0  
1000 s: (-)

Remarks:

:

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

H03

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,0 e 3  
Edition : 5.5.88  
Replaces : 11.3.87  
Test oil : ISO-4113  
Combination no. : 9 400 230 038  
Injection pump  
Pump designation : PES8A95D32ORS2624  
Governor  
Governor design. : RQV325...1400AB1149R

Customer-spec. information  
Customer : IHC

Engine : D 9 L

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 019

Inlet press., bar : 2.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Prestroke mm : 2.55...2.65  
                  : (2.50...2.70)  
Rack travel in mm : 10.50  
Firing order : 1-3-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-

H04

Tolerance + - ° : 270-315  
                  : 0.5(0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400  
-----  
Rack travel in mm : 11.30...11.40  
-----  
Del. quantity cm<sup>3</sup>/ : 6.9...7.1  
-----  
100 s: (6.7...7.3)  
-----  
Spread cm<sup>3</sup> : 0.3  
-----  
100 s: (0.6)  
-----  
2nd speed rpm : 325  
Rack travel in mm : 7.00...7.20  
Del. quantity cm<sup>3</sup>/ : 0.9...1.5  
100 s: (-)  
Spread cm<sup>3</sup> : 0.3  
100 s: (0.55)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1430  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Del. quantity : 69.5...71.5  
1000 : (67.5...73.5)  
Spread cm<sup>3</sup> : 3.0  
1000 : (6.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1545...1575  
4th rack travel in: 1620  
Speed rpm : 0.00...1.00

## LOW IDLE 1

Control lever  
position degrees: 7...15  
Setting point w/out bumper spring  
Speed rpm : 325

Rack travel in mm : 7.10

Testing:

Speed rpm : 100  
Minimum rack trave: 9.10  
Speed rpm : 325  
Rack travel in mm : 7.00...7.20  
Rack travel in mm : 2.00  
Speed rpm : 620...680

START CUT-OUT

Speed 1/min : 170...250

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 59.0  
1000 s: ( 63.0)  
Spread cm<sup>3</sup> : -  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 75.0...99.0  
1000 s: (-)  
Rack travel in mm : 17.20

HIGH IDLE

1st version

Speed rpm : 1540  
Spread cm<sup>3</sup> : 6.0  
1000 s: (-)

LOW IDLE

Speed rpm : 325  
Del.quantity cm<sup>3</sup>/ : 9.0...15.0  
1000 s: (-)

Remarks:

H05

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : IHC 9,0 e 2  
Edition : 5.5.88  
Replaces : 7.86  
Test oil : ISO-4113  
  
Combination no. : 9 400 230 039  
  
Injection pump  
Pump designation : PES8A95D32ORS2624  
EP type number : 9 410 230 016  
Governor  
Governor design. : RQV325...1400AB1149-1R  
Governor no. : 9 420 231 007

Customer-spec. information  
Customer : IHC

Engine : D 9 L

1st version kW : 136.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45

Overflow valve : 1 417 413 019

Inlet press., bar : 2.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 9 681 271 001

Outside diameter  
x Wall thickness  
x Length mm : 6.35X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Prestroke mm : 2.55...2.65  
: (2.50...2.70)  
Rack travel in mm : 17.20

Firing order : 1-8-7-3-6-5-4-2

Phasing : 0-45-90-135-180-225-270-315  
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1400  
-----  
Rack travel in mm : 12.30...12.40  
-----  
Del. quantity cm<sup>3</sup>/ : 7.7...7.9  
-----  
100 s : (7.5...8.1)  
-----  
Spread cm<sup>3</sup> : 0.3  
-----  
100 s : (-)

2nd speed rpm : 325  
Rack travel in mm : 7.30...7.50  
Del. quantity cm<sup>3</sup>/ : 0.9...1.5  
100 s : (-)  
Spread cm<sup>3</sup> : 0.3  
100 s : (0.6)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1430  
Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Del. quantity : 77.0...79.0  
1000 : (75.0...81.0)  
Spread cm<sup>3</sup> : 3.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 62...70

Testing:  
1st rack travel in: 11.30  
Speed rpm : 1440...1450  
2nd rack travel in: 4.00  
Speed rpm : 1545...1575  
4th rack travel in: 1640  
Speed rpm : 0.00...1.00



LOW IDLE 1

Control lever  
position degrees: 9...15

Testing:

Speed rpm : 100  
Minimum rack trave: 9.10  
Speed rpm : 325  
Rack travel in mm : 7.30...7.50  
Rack travel in mm : 2.00  
Speed rpm : 630...690

START CUT-OUT

Speed 1/min : 170...250

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : <69.0  
1000 s: (<71.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30  
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 76.0...96.0  
1000 s: (-)  
Rack travel in mm : 17.20

HIGH IDLE

1st version

Speed rpm : 1550  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.30...7.50  
Del.quantity cm<sup>3</sup>/ : 9.0...15.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 3.0  
1000 s: (-)

Remarks:

H07

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 a 9  
Edition : 6.5.88  
Replaces : 5.3.87  
Test oil : ISO-4113  
Combination no. : 9 400 231 012  
Injection pump  
Pump designation : PES6P110A720RS361  
Governor  
Governor design. : RSV400...1100P2/456  
DR

Customer-spec. information  
Customer : JOHN DDERE

Engine : 6466 A

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 457 413 010  
Inlet press., bar : 1.50  
Test nozzle holder  
assembly : 0 681 343 009  
Opening  
pressure, bar : 172...175  
Test lines : 1 680 750 015  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
Prestroke mm : 2.75...2.85  
                  : (2.70...2.90)  
Rack travel in mm : 11.30...11.40  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100  
-----  
Rack travel in mm : 11.30...11.40  
-----  
Del. quantity cm<sup>3</sup>/ : 15.0...15.2  
-----  
100 s: (14.7...15.5)  
-----  
Spread cm<sup>3</sup> : 0.4  
-----  
100 s: (-)  
-----  
2nd speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Del. quantity cm<sup>3</sup>/ : 0.8...1.1  
100 s: (-)  
Spread cm<sup>3</sup> : -  
100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 1100  
Del. quantity : 150.0...152.0  
1000 : (147.0...155.0)  
Spread cm<sup>3</sup> : 4.0  
1000 : (-)

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 10.30  
Speed rpm : 1145...1155  
2nd rack travel in: 6.50  
Speed rpm : 1195...1205

## LOW IDLE 1

Control lever  
position degrees: 17...25

Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.80

Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.50...5.70  
Rack travel in mm : 2.00  
Speed rpm : 570...630

TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.30...11.40  
2nd speed rpm : 650  
Rack travel in m: 11.60...11.80

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 800  
Pressure hPa : 550  
Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 800

1st pressure hPa : 330  
Rack travel in m: 9.50...9.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100  
Speed rpm : 650  
Del.quantity cm<sup>3</sup>/ : 153.5...156.5  
1000 s: (150.5...159.5)  
Spread cm<sup>3</sup> : -  
1000 s: (-)

Aneroid pressure h: -  
Speed rpm : 550  
Del.quantity cm<sup>3</sup>/ : 90.0...96.0  
1000 s: (87.0...99.0)  
Spread cm<sup>3</sup> : -  
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30  
Speed rpm : 1145...1155

H09

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (-)

HIGH IDLE

1st version

Speed rpm : 1200  
Del.quantity cm<sup>3</sup>/ : 55.0...65.0  
1000 s: (-)

LOW IDLE

Speed rpm : 400  
Del.quantity cm<sup>3</sup>/ : 8.5...11.5  
1000 s: (-)

Remarks:

: JOHN DEERE NO. AR  
: 87785

Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 a10  
Edition : 6.5.88  
Replaces : 5.3.87  
Test oil : IS0-4113  
  
Combination no. : 9 400 231 066  
  
Injection pump  
Pump designation : PES6P110A72ORS361  
EP type number : 0 412 016 050  
Governor  
Governor design. : RSV400...105QP2/477  
Governor no. : 9 420 234 046

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 AR-01

1st version kW : 167.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 40...45

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.75...2.85  
: (2.70...2.90)

Rack travel in mm : 10.50

H10

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.50...11.60

Del. quantity cm<sup>3</sup>/ : 15.0...15.2

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (-)

2nd speed rpm : 400

Rack travel in mm : 6.10...6.30

Del. quantity cm<sup>3</sup>/ : 1.2...1.8

100 s: (-)

Spread cm<sup>3</sup> : 0.4

100 s: (-)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 150.0...152.0

1000 : (147.0...155.0)

Spread cm<sup>3</sup> : 4.0

1000 : (6.0)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.50

Speed rpm : 1105...1115

2nd rack travel in: 4.00

Speed rpm : 1185...1215

4th rack travel in: 1280  
Speed rpm : 0.30...1.70

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 5.70

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 570...630  
Speed rpm : 800  
Maximum rack trave: 1.00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.45...11.55  
2nd speed rpm : 650  
Rack travel in m: 12.25...12.35  
3rd speed rpm : 500  
Rack travel in m: 9.15...9.25

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 533  
Rack travel mm : 11.50...11.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : 266  
Rack travel in m: 9.60...10.00  
2nd pressure hPa : -  
Rack travel in m: 9.10...9.30

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 162.0...166.0  
1000 s: (159.0...169.0)  
Spread cm<sup>3</sup> : 6.0  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : 89.0...95.0  
1000 s: (87.0...97.0)  
Spread cm<sup>3</sup> : 6.0  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1105...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 155.0...175.0  
1000 s: (-)  
Rack travel in mm : 19.00...21.00

#### HIGH IDLE

1st version  
Speed rpm : 1150  
Rack travel in mm : 6.30...6.50  
Del. quantity cm<sup>3</sup>/ : 47.0...57.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 6.0  
1000 s: (-)

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 6.10...6.30  
Del. quantity cm<sup>3</sup>/ : 12.0...18.0  
1000 s: (-)  
Spread cm<sup>3</sup> : 4.0  
1000 s: (-)

#### Remarks:

: JOHN DEERE NO. AR  
: 98259  
Start-of-delivery mark = 13.25° after  
start of delivery cyl. 1.

#### APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 g 2
Edition : 19.5.88
Replaces : 7.86
Test oil : ISO-4113
Combination no. : 9 400 231 084
Injection pump
Pump designation : PES6P110A72ORS3083-1
Governor
Governor design. : RSV425...1100P2/489

Customer-spec. information
Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil
Outlet temp, °C : 38...42
Overflow valve : 1 456 413 010
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test lines : 9 681 271 022

Outside diameter
x Wall thickness
x Length mm : 6,00X1,50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 3.45...3.55
: (3.40...3.60)
Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100
Rack travel in mm : 12.00...12.10
Del. quantity cm3/ : 13.7...13.9
100 s: (13.4...14.2)
Spread cm3 : 0.4
100 s: (0.75)
2nd speed rpm : 425
Rack travel in mm : 6.40...6.60
Del. quantity cm3/ : 1.0...1.5
100 s: (0.8...1.8)
Spread cm3 : 0.45
100 s: (0.75)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension
Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1100
Aneroid pressure h: 1200
Del. quantity : 137.5...139.5
1000 : (134.5...142.5)
Spread cm3 : 4.0
1000 : (7.5)

RATED SPEED

1st version
Control lever
position degrees: 46...54

Testing:
1st rack travel in: 11.00
Speed rpm : 1155...1165
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 6.00

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 655...715

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 700  
Rack travel in m: 13.10...13.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 370  
Rack travel mm : 12.45...12.55

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.40...11.80  
2nd pressure hPa : -  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 155.5...159.5  
1000 s: (152.5...162.5)  
Spread cm<sup>3</sup> : -  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (102.0...112.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1155...1165

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)

#### HIGH IDLE

1st version  
Aneroid pressure h: 1200  
Del. quantity cm<sup>3</sup>/ : 47.0...57.0  
1000 s: (45.5...58.5)

#### LOW IDLE

Speed rpm : 425  
Del. quantity cm<sup>3</sup>/ : 10.5...15.5  
1000 s: (8.0...18.0)

#### Remarks:

Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 g 1  
 Edition : 19.5.88  
 Replaces : 11.85  
 Test oil : ISO-4113  
 Combination no. : 9 400 231 084  
 Injection pump  
 Pump designation : PES6P110A72ORS3083-1  
 Governor  
 Governor design. : RSV425...1100P2A489

Customer-spec. information  
 Customer : JOHN DEERE

Engine : 6466 A

TEST BENCH REQUIREMENTS

Test oil  
 Outlet temp, °C : 38...42  
 Overflow valve : 1 456 413 010

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 9 681 271 022

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X1,50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3,45...3,55  
 : (3,40...3,60)

Rack travel in mm : 10,50  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.5 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100  
 -----  
 Rack travel in mm : 12.00...12.10  
 -----  
 Del. quantity cm<sup>3</sup>/ : 13.7...13.9  
 -----  
 100 s: (13.4...14.2)  
 -----  
 Spread cm<sup>3</sup> : 0.4  
 -----  
 100 s: (0.75)  
 -----

2nd speed rpm : 425  
 Rack travel in mm : 6.40...6.60  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.5  
 100 s: (0.8...1.8)  
 Spread cm<sup>3</sup> : 0.45  
 100 s: (0.75)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
 Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1100  
 Aneroid pressure h: 1200  
 Del. quantity : 137.5...139.5  
 1000 : (134.5...142.5)  
 Spread cm<sup>3</sup> : 4.0  
 1000 : (7.5)

RATED SPEED

1st version  
 Control lever  
 position degrees: 46...54

Testing:  
 1st rack travel in: 11.00  
 Speed rpm : 1155...1165  
 2nd rack travel in: 4.00  
 Speed rpm : 1230...1260  
 4th rack travel in: 1350  
 Speed rpm : 0.30...1.40

LOW IDLE 1



Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 425  
Rack travel in mm : 6.00

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 425  
Rack travel in mm : 6.40...6.60  
Rack travel in mm : 2.00  
Speed rpm : 655...715

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 700  
Rack travel in m: 13.10...13.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 370  
Rack travel mm : 12.45...12.55

Measurement  
Speed 1/min : 500

1st pressure hPa : 200  
Rack travel in m: 11.40...11.80  
2nd pressure hPa : -  
Rack travel in m: 10.90...11.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1200  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 155.5...159.5  
1000 s: (152.5...162.5)  
Spread cm<sup>3</sup> : -  
1000 s: (-)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : -  
1000 s: (102.0...112.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00  
Speed rpm : 1155...1165

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 150.0...170.0  
1000 s: (145.0...175.0)

#### HIGH IDLE

1st version  
Aneroid pressure h: 1200  
Del. quantity cm<sup>3</sup>/ : 47.0...57.0  
1000 s: (45.5...58.5)

#### LOW IDLE

Speed rpm : 425  
Del. quantity cm<sup>3</sup>/ : 10.5...15.5  
1000 s: (8.0...18.0)

Remarks:  
Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MWM 5,9 a11  
 Edition : 04.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 9 407 083 279  
 Injection pump  
 Pump designation : PES6A800320RS1271  
 Governor  
 Governor design. : RSV350...1400A2B2179  
 R

Customer-spec. information  
 Customer : MWM

Engine : D229-6

TEST BENCH REQUIREMENTS

Overflow valve : 1 417 413 000

Inlet press., bar : 1.0

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

BEGINNING OF DELIVERY

Prestroke mm : 2,20...2,30  
 : (2,15...2,35)  
 Rack travel in mm : 9,00  
 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0,50 (0,75)

BEGINNING OF DELIVERY DIFFERENCE

H16

betw. rack trav. m: 10,50  
 & maximum rack tra: 21,00  
 Difference ° CS : 4...5

BASIC SETTING

1st speed rpm : 1380  
 -----  
 Rack travel in mm : 9,45...9,55  
 -----  
 Del. quantity cm<sup>3</sup>/ : 5,25...5,35  
 -----  
 100 s: (5,05...5,55)  
 -----  
 Spread cm<sup>3</sup> : 0,25  
 -----  
 100 s: (0,4)  
 -----  
 2nd speed rpm : 350  
 Rack travel in mm : 6,90...7,10  
 Del. quantity cm<sup>3</sup>/ : 0,75...1,05  
 100 s: (0,45...1,35)  
 Spread cm<sup>3</sup> : 0,2  
 100 s: (0,35)

GUIDE SLEEVE POSITION

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0,3...1,0

Governor spring pre-tension  
 Click setting x : 5,1

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
 Speed rpm : 1380  
 Del. quantity : 52,5...53,5  
 1000 : (51,0...55,0)  
 Spread cm<sup>3</sup> : 2,5  
 1000 : (4,0)

RATED SPEED

1st version  
 Control lever  
 position degrees: 50...58

Testing:  
 1st rack travel in: 8,50  
 Speed rpm : 1420...1430  
 2nd rack travel in: 4,00  
 Speed rpm : 1470...1500  
 3rd rack travel in: 0,30...1,70  
 Speed rpm : 1650

LOW IDLE 1  
 Control lever

position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6,50

Speed rpm : 350  
Rack travel in mm : 6,40...6,60

Remarks:

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19,00  
Speed rpm : 350  
Rack travel in mm : 6,90...7,10  
Rack travel in mm : 2,00  
Speed rpm : 640...700  
Speed rpm : 850  
Maximum rack trave: 1,00

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1380  
Rack travel in m: 9,45...9,55  
2nd speed rpm : 1100  
Rack travel in m: 9,95...10,25  
3rd speed rpm : 800  
Rack travel in m: 10,70...10,90  
4th speed rpm : 500  
Rack travel in m: 10,90...11,00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 1100  
Del.quantity cm<sup>3</sup>/ : 54,5...56,5  
1000 s: (52,5...58,5)  
Spread cm<sup>3</sup> : 3,5  
1000 s: (4,5)  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 54...56  
1000 s: (52...58)  
Spread cm<sup>3</sup> : 3,5  
1000 s: (4,5)  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 52...54  
1000 s: (50...56)  
Spread cm<sup>3</sup> : 3,5  
1000 s: (4,5)

#### BREAKAWAY

##### 1st version

Speed rpm : 1420...1430

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Rack travel in mm : 19,00...21,00

#### LOW IDLE

H17

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : S0F 2,5 0  
Compl. date: : 22,07,87  
Edition : 22,04,88  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 4/10F2050 R295  
Type number : 0 460 404 053

Customer-specific information  
Customer : IVECO-SOFIM

Engine : 8144.91.2101 EMM OE

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,2  
(from BDC) : +-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel:

Speed 1/min: 600  
Charge press. hPa: 800  
Setting value mm: 1,8...2,2

### Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 800  
Setting value bar: 5,4...6,0

### Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 59,5...60,5  
Dispersion cm<sup>3</sup> / : 3,0  
1000H.: (3,0)

### Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 45,5...46,5

### Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...17,0  
Dispersion cm<sup>3</sup> / : 3,0  
1000H.: (3,0)

### Full-load speed regulation:

Speed 1/min: 2325  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...19,0

### Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 45,0

### Load-dependent start of delivery:

Speed 1/min: 600  
Charge press. hPa: -

### Inspection-pump test specifications Test specifications in parentheses

### Timing-device characteristic:

1st speed 1/min: 600  
Charge press. hPa: 800  
TD travel mm: -  
mm: 1,5...2,5

2nd speed 1/min: 1500  
Charge press. hPa: 800  
TD travel mm: 6,1...6,9  
mm: (5,8...7,2)

3rd speed 1/min: 2000  
Charge press. hPa: 800

TD travel mm: 8,3...9,1  
mm: (8,0...9,4)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 800  
Supply-pump pressure bar: 3,1...3,7  
2nd speed 1/min: 1500  
Charge press. hPa: 800  
Supply-pump pressure bar: 5,4...6,0  
3rd speed 1/min: 2000  
Charge press. hPa: 800  
Supply-pump pressure bar: 6,6...7,2

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: 800  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
2nd speed 1/min: 2000  
Charge press. hPa: 800  
Overflow quantity cm<sup>3</sup>/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 800  
Charge-air pressure-setting point hPa: 290  
LDA stroke mm: 4,5  
Del. quantity cm<sup>3</sup>/1000H.: 49,5...50,5  
2nd speed 1/min: 2400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...3,0  
3rd speed 1/min: 2325  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: 13,0...19,0  
4th speed 1/min: 2000  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: 53,5...56,5  
5th speed 1/min: 1500  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: (58,0...62,0)  
6th speed 1/min: 600  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: 54,5...57,5  
7th speed 1/min: 600  
Charge press. hPa: -

Del. quantity cm<sup>3</sup>/1000H.: 45,5...46,5  
1000H.: (43,5...48,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000H.: 13,0...17,0  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/1000H.: 4,0...9,0  
3rd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/1000H.: 3,5...8,5  
4th speed 1/min: 700  
Del. quantity cm<sup>3</sup>/1000H.: 1,5...4,5

Automatic starting fuel delivery:

1st speed 1/min: 450  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/ind. 1000H.: 47,0  
2nd speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/max. 1000H.: 46,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation mm : -  
K mm : 5,6...6,0  
KF mm : 1,1...1,5  
MS mm : 2,4  
SVS max. mm : 20,0...22,0  
XK mm : 9,7...13,3  
XL mm : 9,7...13,3

Remarks:

Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 0 1  
Compl. date: : 14,03,88  
Edition : 22,04,88  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/10F2050 R295-1  
Type number : 0 460 404 060  
  
Customer-specific information  
Customer : IVECO-SOFIM  
  
Engine : 8144.91.2101 THEMA

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 000  
  
Opening  
pressure bar : 147...150  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : 0,2  
(from BDC): ±0,02 (0,04)  
  
Injection-pump setting values  
Test specifications in parentheses

#### Timing-device travel:

Speed 1/min: 600  
Charge press. hPa: 800  
Setting value mm: 1,8...2,2

#### Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 800  
Setting value bar: 5,4...6,0

#### Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 59,5...60,5  
Dispersion cm<sup>3</sup> / : 3,0  
1000H.: (3,0)

#### Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 45,5...46,5

#### Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...17,0  
Dispersion cm<sup>3</sup> / : 3,0  
1000H.: (3,0)

#### Full-load speed regulation:

Speed 1/min: 2325  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...19,0

#### Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 45,0

#### Load-dependent start of delivery:

Speed 1/min: 600  
Charge press. hPa: -

#### Inspection-pump test specifications Test specifications in parentheses

#### Timing-device characteristic:

1st speed 1/min: 600  
Charge press. hPa: 800  
TD travel mm: -  
mm: 1,5...2,5  
2nd speed 1/min: 1500  
Charge press. hPa: 800  
TD travel mm: 6,1...6,9  
mm: (5,8...7,2)  
3rd speed 1/min: 2000  
Charge press. hPa: 800

TD travel mm: 8,3...9,1  
mm: (8,0...9,4)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 800  
Supply-pump pressure bar: 3,1...3,7  
2nd speed 1/min: 1500  
Charge press. hPa: 800  
Supply-pump pressure bar: 5,4...6,0  
3rd speed 1/min: 2000  
Charge press. hPa: 800  
Supply-pump pressure bar: 6,6...7,2

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: 800  
Overflow quantity cm<sup>3</sup>/10s: (41...83)  
2nd speed 1/min: 2000  
Charge press. hPa: 800  
Overflow quantity cm<sup>3</sup>/10s: (55...138)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800  
Charge-air pressure-setting point hPa: 290  
LDA stroke mm: 4,5  
Del. quantity cm<sup>3</sup>/1000H.: (49,5...50,5)  
2nd speed 1/min: 2400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: (0,0...3,0)  
3rd speed 1/min: 2325  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: (13,0...19,0)  
4th speed 1/min: 2000  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: (53,5...56,5)  
5th speed 1/min: 1500  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: (58,0...62,0)  
6th speed 1/min: 600  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/1000H.: (54,5...57,5)  
7th speed 1/min: 600  
Charge press. hPa: -

Del. quantity cm<sup>3</sup>/1000H.: 45,5...46,5  
1000H.: (43,5...48,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 400  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000H.: (13,0...17,0)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/1000H.: (4,0...9,0)  
3rd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/1000H.: (3,5...8,5)  
4th speed 1/min: 700  
Del. quantity cm<sup>3</sup>/1000H.: (1,5...4,5)

Automatic starting fuel delivery:

1st speed 1/min: 450  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000H.: (47,0 ind.)  
2nd speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000H.: (46,0 max.)

Shutoff electromagnet:

Cut-in min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : 5,6...6,0  
MS mm : 1,1...1,5  
SVS max. mm : -  
XK mm : 20,0...22,0  
XL mm : 9,9...13,3

Remarks:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,3 B1  
Edition : 15.02.88  
replaces : 04.86  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/10F2400 L32  
Type number : 0 460 406 003  
  
Customer-specific information  
Customer : VW  
  
Engine : 087-VOL 2,4L

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 000  
  
Opening  
pressure bar : 147...150  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Setting value mm: 2.8...3,2

Supply-pump pressure:

Speed 1/min: 1500  
Setting value bar: 5,3...5,8

Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del. quantity cm3/  
1000H.: 28,5...29,5

Dispersion cm3/: 2,5  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375  
Del. quantity cm3/  
1000H.: 6,0...10,0  
Dispersion cm3/: 2,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2700  
Del. quantity cm3/  
1000H.: 7,0...11,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm3/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
TD travel mm: 0,8...1,6  
mm: (0,5...1,9)  
2nd speed 1/min: 1500  
TD travel mm: 2,8...3,2  
mm: (2,3...3,7)  
3rd speed 1/min: 2400  
TD travel mm: 5,7...6,5  
mm: (5,4...6,8)

Supply-pump pressure characteristic:

1st speed 1/min: 750  
Supply-pump  
pressure bar: 3,2...3,8  
2nd speed 1/min: 1500  
Supply-pump  
pressure bar: 5,3...5,8  
3rd speed 1/min: 2400  
Supply-pump  
pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 750  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2400  
Overflow : 55...138  
quantity cm3/10s: (40...153)



Delivery-quant. and breakaway char.:

1st speed 1/min: 2700  
Del. quantity cm<sup>3</sup>/: 7,00...11,0  
1000H.: (5,0...13,0)  
2nd speed 1/min: 2800  
Del. quantity cm<sup>3</sup>/: 0,0...6,0  
1000H.: -  
3rd speed 1/min: 2625  
Del. quantity cm<sup>3</sup>/: 14,5...24,5  
1000H.: (13,5...25,5)  
4th speed 1/min: 2400  
Del. quantity cm<sup>3</sup>/: 23,0...25,0  
1000H.: (21,8...26,2)  
5th speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (26,8...31,2)  
6th speed 1/min: 750  
Del. quantity cm<sup>3</sup>/: 26,0...29,0  
1000H.: (24,5...30,5)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 20,0

2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 25,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4

H25

KF mm : 6,2...6,6  
MS mm : 1,4...1,8  
SVS max. mm : 4,1  
XK mm : 17,0...19,0  
XL mm : 9,7...13,1

Remarks:

:

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 A  
Compl. date: : 21.03.88  
Edition : 22.04.88  
replaces : 16.11.87  
Calibrating oil : ISO-4113

Injection pump : VE 6/10F1800 R209  
Type number : 0 460 406 048

Customer-specific information  
Customer : ONAN

Engine : L 634 T

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,2  
(from BDC) : +/-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1400  
Charge press. hPa: 800  
Setting value bar: 4,8...5,4

Full-load del. with charge press.:

Speed 1/min: 1400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 58,5...59,5  
Dispersion cm<sup>3</sup> : 3,0  
1000H : (4,0)

Full-load del. w/out charge press.:

Speed 1/min : 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 44,0...45,0

Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 14,0...18,0  
Dispersion cm<sup>3</sup> : 3,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 1900  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H: 37,0...43,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 42,0

Load-dependent start of delivery:

Speed 1/min: 1400

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
Charge press. hPa: 800  
TD travel mm: 1,4...2,2  
mm: (1,1...2,5)  
2nd speed 1/min: 1400  
Charge press. hPa: 800  
TD travel mm: 4,3...4,7  
mm: (3,8...5,2)  
3rd speed 1/min: 1800  
Charge press. hPa: 800  
TD travel mm: 5,8...6,6  
mm: (5,5...6,9)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 2,7...3,3  
 2nd speed 1/min: 1400  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 4,8...5,4  
 3rd speed 1/min: 1800  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 6,0...6,6

Overflow quantity at overflow valve:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Overflow quantity cm<sup>3</sup>/10s: (41...83)  
 2nd speed 1/min: 1800  
 Charge press. hPa: 800  
 Overflow quantity cm<sup>3</sup>/10s: (55...138)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
 Charge-air pressure-setting point hPa: 300  
 LDA stroke mm: 5,1  
 Del. quantity cm<sup>3</sup>/1000H.: (50,5...51,5)  
 2nd speed 1/min: 2050  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (48,7...53,3)  
 3rd speed 1/min: 2000  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (5,5...14,5)  
 4th speed 1/min: 1950  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (23,0...31,0)  
 5th speed 1/min: 1900  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (37,0...43,0)  
 6th speed 1/min: 1800  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (51,5...54,5)  
 7th speed 1/min: 1400  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (56,7...61,3)  
 8th speed 1/min: 700

H27

Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (58,0...61,0)  
 9th speed 1/min: 700  
 Charge press. hPa: -  
 Del. quantity cm<sup>3</sup>/1000H.: (44,0...45,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1800  
 Del. quantity cm<sup>3</sup>/1000H.: 0..3

Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: -  
 Del. quantity cm<sup>3</sup>/1000H.: (0,0...3,0)

Idle delivery:

1st speed 1/min: 400  
 Del. quantity cm<sup>3</sup>/1000H.: (14,0..18,0)  
 2nd speed 1/min: 450  
 Del. quantity cm<sup>3</sup>/1000H.: (0,0...6,0)  
 3rd speed 1/min: 350  
 Del. quantity cm<sup>3</sup>/1000H.: (26,5..33,5)

Automatic starting fuel delivery:

1st speed 1/min: 220  
 Del. quantity cm<sup>3</sup>/ind. 1000H.: 42,0  
 2nd speed 1/min: 300  
 Del. quantity cm<sup>3</sup>/1000H.: 42,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0  
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -  
 KF mm : 5,6...6,0  
 MS mm : 0,6...1,0  
 SVS max. mm : 1,7  
 XK mm : 20,0...22,0  
 XL mm : 10,1...13,5

Remarks:

:

Correction at adjusting nut (46)



## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 2,4 S1  
Compl. date: : 23.09.87  
Edition : 16.02.88  
replaces : 19.12.86  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/10F2400 L216  
Type number : 0 460 406 049

Customer-specific information  
Customer : VW

Engine : 087T-VOL LLK

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 800  
Setting value mm: 1,4...1,8

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 800  
Setting value bar: 5,7...6,3

Full-load del. with charge press.:

Speed 1/min: 1500

J01

Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 45,5...46,5  
Dispersion cm<sup>3</sup> / : 2,5  
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 25,5...26,5

Low-idle speed regulation:

Speed 1/min: 415  
Del. quantity cm<sup>3</sup>/  
1000H.: 6,0...10,0  
Dispersion cm<sup>3</sup> / : 2,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2675  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 14,0...18,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 40,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1200  
Charge press. hPa: 800  
TD travel mm: 0,2...0,8  
mm: (0,0...1,3)

2nd speed 1/min: 1500  
Charge press. hPa: 800  
TD travel mm: 1,4...1,8  
mm: (0,9...2,3)

3rd speed 1/min: 2000  
Charge press. hPa: 800  
TD travel mm: 2,7...3,5  
mm: (2,4...3,8)

4th speed 1/min: 2400  
Charge press. hPa: 800  
TD travel mm: 4,1...4,9  
mm: (3,8...5,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 800

Supply-pump pressure bar: 3,3...3,9  
 bar: -  
 2nd speed 1/min: 1500  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 5,7...6,3  
 bar: -  
 3rd speed 1/min: 2400  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 7,9...8,5  
 bar: -

Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Overflow : 41...83  
 quantity cm3/10s: (26...98)  
 2nd speed 1/min: 2400  
 Charge press. hPa: 800  
 Overflow : 55...138  
 quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800  
 Charge-air pressure-setting point hPa: 300  
 LDA stroke mm: 5,7  
 Del. quantity cm3/: 34,0...35,0  
 1000H.: (31,5...37,5)  
 2nd speed 1/min: 2675  
 Charge press. hPa: 800  
 Del. quantity cm3/: 14,0...18,0  
 1000H.: (12,0...20,0)  
 3rd speed 1/min: 2850  
 Charge press. hPa: 800  
 Del. quantity cm3/: 0,0...6,0  
 1000H.: -  
 4th speed 1/min: 2575  
 Charge press. hPa: 800  
 Del. quantity cm3/: 25,0...35,0  
 1000H.: (24,0...36,0)  
 5th speed 1/min: 2400  
 Charge press. hPa: 800  
 Del. quantity cm3/: 37,5...39,5  
 1000H.: (36,3...40,7)  
 6th speed 1/min: 1500  
 Charge press. hPa: 800  
 Del. quantity cm3/: -  
 1000H.: (43,8...48,2)  
 7th speed 1/min: 800  
 Charge press. hPa: 300  
 Del. quantity cm3/: -  
 1000H.: (31,5...37,5)  
 8th speed 1/min: 600  
 Charge press. hPa: 800  
 Del. quantity cm3/: 38,5...41,5  
 1000H.: (37,0...43,0)

9th speed 1/min: 600  
 Del. quantity cm3/: 25,5...26,5  
 1000H.: (23,0...29,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 415  
 ELAB volt: -  
 Del. quantity cm3/: 0,0...3,0  
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 415  
 Del. quantity cm3/: 6,0...10,0  
 1000H.: (4,0...12,0)  
 2nd speed 1/min: 750  
 Del. quantity cm3/: 0,0...4,0  
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 230  
 Charge press. hPa: -  
 Del. quantity cm3/: -  
 ind. 1000H: 40,0  
 2nd speed 1/min: 380  
 Charge press. hPa: -  
 Del. quantity cm3/: -  
 max. 1000H : 30,0

Shutoff electromagnet:

Cut-in  
 min. voltage : 10,0  
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
 K mm : 3,2...3,4  
 KF mm : 6,2...6,6  
 MS mm : 1,6...2,0  
 SVS max. mm : 3,2  
 XK mm : 17,0...19,0  
 XL mm : 9,7...13,1

Remarks:  
 :

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : ONA 3,4 B  
Edition : 22.04.88  
replaces : 16.11.87  
Calibrating oil : ISO-4113  
  
Injection pump : VE 6/10F1400 R209-1  
Type number : 0 460 406 052  
  
Customer-specific information  
Customer : ONAN  
  
Engine : L 634 T

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 000  
  
Opening  
pressure bar : 147...150  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : 0,2  
(from BDC) : +/-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 800  
Setting value mm: 2,7...3,3

### Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 800  
Setting value bar: 3,8...4,4

### Full-load del. with charge press.:

Speed 1/min: 1100  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 61,0...62,0  
Dispersion cm<sup>3</sup> / : 3,0  
1000H.: (3,0)

### Full-load del. w/out charge press.:

Speed 1/min : 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 44,5...45,5

### Low-idle speed regulation:

Speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 14,0...18,0  
Dispersion cm<sup>3</sup> / : 3,0  
1000H.: (3,0)

### Full-load speed regulation:

Speed 1/min: 1480  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 42,0...46,0

### Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 42,0

### Load-dependent start of delivery:

Speed 1/min: 1100

Inspection-pump test specifications  
Test specifications in parentheses

### Timing-device characteristic:

1st speed 1/min: 800  
Charge press. hPa: 800  
TD travel mm: 1,4...2,2  
mm: (1,1...2,5)  
2nd speed 1/min: 1100  
Charge press. hPa: 800  
TD travel mm: 2,7...3,3  
mm: (2,3...3,7)  
3rd speed 1/min: 1400  
Charge press. hPa: 800  
TD travel mm: 4,3...4,7  
mm: (3,8...5,2)

Supply-pump pressure characteristic:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 2,3...2,9  
 2nd speed 1/min: 1100  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 3,8...4,4  
 3rd speed 1/min: 1400  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 4,8...5,4

Overflow quantity at overflow valve:

1st speed 1/min: 700  
 Charge press. hPa: 800  
 Overflow : 41...83  
 quantity cm3/10s: (26...98)  
 2nd speed 1/min: 1400  
 Charge press. hPa: 800  
 Overflow : 55...138  
 quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
 Charge-air pressure-setting point hPa: 200  
 LDA stroke mm: 5,7  
 Del. quantity cm3/: 47,0...48,0  
 1000H.: (45,2...49,8)  
 2nd speed 1/min: 1600  
 Charge press. hPa: 800  
 Del. quantity cm3/: 0,0...6,0  
 1000H.: -  
 3rd speed 1/min: 1560  
 Charge press. hPa: 800  
 Del. quantity cm3/: 14,0...22,0  
 1000H.: -  
 4th speed 1/min: 1480  
 Charge press. hPa: 800  
 Del. quantity cm3/: 42,0...46,0  
 1000H.: (40,0...48,0)  
 5th speed 1/min: 1400  
 Charge press. hPa: 800  
 Del. quantity cm3/: 56,5...59,5  
 1000H.: (55,7...60,3)  
 6th speed 1/min: 1100  
 Charge press. hPa: 800  
 Del. quantity cm3/: 61,0...62,0  
 1000H.: (59,2...63,8)  
 7th speed 1/min: 700  
 Charge press. hPa: 800  
 Del. quantity cm3/: 58,0...60,0  
 1000H.: -  
 8th speed 1/min: 700  
 Charge press. hPa: -

J04

Del. quantity cm3/: 44,5...45,5  
 1000H.: (42,7...47,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400  
 Del. quantity cm3/: 0..3  
 1000H.: -

Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: -  
 Del. quantity cm3/: 0,0...3,0  
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 400  
 Del. quantity cm3/: 14,0..18,0  
 1000H.: 12,0...20,0)  
 2nd speed 1/min: 450  
 Del. quantity cm3/: 0,0...6,0  
 1000H.: -  
 3rd speed 1/min: 350  
 Del. quantity cm3/: 26,5..33,5  
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 220  
 Del. quantity cm3/: -  
 ind. 1000H: 42,0  
 2nd speed 1/min: 300  
 Del. quantity cm3/: -  
 max. 1000H : 42,0

Shutoff electromagnet:

Cut-in  
 min. voltage : 10,0  
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
 K mm : -  
 KF mm : 5,6...6,0  
 MS mm : 0,6...1,0  
 SVS max. mm : 1,7  
 XK mm : 20,0...22,0  
 XL mm : 8,9...12,3

Remarks:

Correction at adjusting nut (46)



## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 H  
Edition : 13. 1.88  
replaces : -  
Calibrating oil : ISO-4113

Injection pump : VE 4/11F1900 L217-1B  
Type number : D 460 414 028

Customer-specific information  
Customer : VOLVO PENTA

Engine : TAMD 31 95

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : 0,3  
(from BDC) : +/-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value bar: 6,1...6,7

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 93,5...94,5  
Dispersion cm<sup>3</sup> / : -  
1000H : 5,0

Full-load del. w/out charge press.:

Speed 1/min : 650  
Del. quantity cm<sup>3</sup>/  
1000H.: 58,5...59,5

Low-idle speed regulation:

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000H.: 23...27  
Dispersion cm<sup>3</sup> / : -  
1000H.: 3,5

Full-load speed regulation:

Speed 1/min: 2100  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H: 14,5...20,5

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 95,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 0,5...1,3  
mm: (0,2...1,6)

2nd speed 1/min: 1500  
Charge press. hPa: 1000  
TD travel mm: 2,3...2,7  
mm: (1,8...3,2)

3rd speed 1/min: 1900  
Charge press. hPa: 1000  
TD travel mm: 4,1...4,9  
mm: (3,8...5,2)

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 1000

Supply-pump  
pressure bar: 3,4...4,1  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 6,1...6,7  
3rd speed 1/min: 1900  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 700  
Charge press. hPa: 1000  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1900  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800  
Charge-air pressure-setting  
point hPa: 300  
LDA stroke mm: 6,7  
Del. quantity cm<sup>3</sup>/ : 84,0...85,0  
1000H.: (82,2...86,8)  
2nd speed 1/min: 2200  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/ : -  
1000H.: 0,0...3,0  
3rd speed 1/min: 2100  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/ : 14,5...20,5  
1000H.: (13,5...21,5)  
4th speed 1/min: 1900  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/ : 85,0...88,0  
1000H.: (83,5...89,5)  
5th speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/ : 93,5...94,5  
1000H.: (91,7...96,3)  
6th speed 1/min: 1200  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/ : 97,7...100,3  
1000H.: (96,7...101,3)  
7th speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/ : 96,5...99,5  
1000H.: (95,0...101,0)  
8th speed 1/min: 650  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/ : 58,5...59,5  
1000H.: (56,7...61,3)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1900  
Del. quantity cm<sup>3</sup>/ : 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: 24,0  
Del. quantity cm<sup>3</sup>/ : 0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/ : 23,0...27,0  
1000H.: (20,0...30,0)  
2nd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/ : 7,0...13,0  
1000H.: (5,5...14,5)  
3rd speed 1/min: 480  
Del. quantity cm<sup>3</sup>/ : 0,0...3,0  
1000H.: -

Mounting and assembly dimensions:

KF	mm	: K-0T
MS	mm	: 1,1...1,5
SVS max.	mm	: 3,8
XK	mm	: 18,8...20,8
XL	mm	: 14,3...17,7

Remarks:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 A3  
Compl. date: : 18.05.87  
Edition : 17.02.88  
replaces : -  
Calibrating oil : ISO 4113  
Injection pump : VE 4/11F1900 L217-3B  
0 460 414 032  
Type number :

Customer-specific information  
Customer : VOLVO PENTA

Engine : TMD 31

Power k: 74

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 688 750 013

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : 0,3  
(from BDC): +-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Setting value bar: 6,4...7,0

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 72,0...73,0  
Dispersion cm<sup>3</sup>/  
1000H.: 5,0

Full-load del. w/out charge press.:

Speed 1/min : 650  
Del. quantity cm<sup>3</sup>/  
1000H.: 54,0...55,0

Low-idle speed regulation:

Speed 1/min: 350  
Del. quantity cm<sup>3</sup>/  
1000H.: 18,0...22,0  
Dispersion cm<sup>3</sup>/  
1000H.: 3,5

Full-load speed regulation:

Speed 1/min: 2150  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 12,0...18,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 90,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 1,6...2,4  
mm: (1,3...2,7)  
2nd speed 1/min: 1500  
Charge press. hPa: 1000  
TD travel mm: -  
mm: (2,8...4,2)  
3rd speed 1/min: 1900  
Charge press. hPa: 1000  
TD travel mm: 4,1...4,9  
mm: (3,8...5,2)

Supply-pump pressure characteristic:

1st speed 1/min: 800  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 3,9...4,5  
 2nd speed 1/min: 1500  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 6,4...7,0  
 3rd speed 1/min: 1900  
 Charge press. hPa: 1000  
 Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 650  
 Overflow quantity cm3/10s: 41...83  
 2nd speed 1/min: 1900  
 Charge press. hPa: 1000  
 Overflow quantity cm3/10s: 55...138  
 3rd speed 1/min: 1900  
 Charge press. hPa: 1000  
 Overflow quantity cm3/10s: 40...153

Delivery-quant. and breakaway char.:

1st speed 1/min: 800  
 Charge-air pressure-setting point hPa: 300  
 LDA stroke mm: 6,3  
 Del. quantity cm3/1000H.: 67,5...68,5  
 2nd speed 1/min: 2150  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000H.: 12,0...18,0  
 3rd speed 1/min: 2220  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000H.: 0,0...3,0  
 4th speed 1/min: 1900  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000H.: 67,5...70,5  
 5th speed 1/min: 1500  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000H.: 70,2...74,8  
 6th speed 1/min: 800  
 Charge press. hPa: 1000  
 Del. quantity cm3/1000H.: 73,0...75,0  
 7th speed 1/min: 650  
 Del. quantity cm3/1000H.: 54,0...55,0

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1900  
 Del. quantity cm3/1000H.: 0..3

Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: 12,0  
 Del. quantity cm3/1000H.: 0,0...3,0  
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
 Del. quantity cm3/1000H.: 18,0..22,0  
 2nd speed 1/min: 400  
 Del. quantity cm3/1000H.: 4,5...10,5  
 3rd speed 1/min: 450  
 Del. quantity cm3/1000H.: 0,0...3,0

Automatic starting fuel delivery:

1st speed 1/min: 400  
 Del. quantity cm3/ind. 1000H.: 70,0  
 2nd speed 1/min: 500  
 Del. quantity cm3/ind. 1000H.: 65,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0  
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation mm : -  
 K mm : K OT  
 MS mm : 1,1...1,5  
 SVS max. mm : 3,8  
 XK mm : 18,8...20,8  
 XL mm : 15,4...18,8

Remarks:

Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 5,0 A  
Compl. date: : 11.11.78  
Edition : 19.04.88  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/11F1500 R275  
Type number : 0 460 414 046

Customer-specific information  
Customer : PERKINS

Engine : 500 SERIES FLT BS

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 022

Opening  
pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450

Start of delivery  
Prestroke mm : 0,5  
(from BDC): +-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel:

Speed 1/min: 1100  
Setting value mm: 2,5...2,9  
KSB solenoid-operated  
valve volt: 12,0

### Supply-pump pressure:

Speed 1/min: 1100  
Setting value bar: 4,9...5,5

KSB solenoid-operated  
valve volt: 12,0

### Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 23,0...24,0

KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm<sup>3</sup>/: 3,5  
1000H.: (3,5)

### Low-idle speed regulation:

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000H.: 10,0...14,0  
KSB solenoid-operated  
valve volt: 12,0  
Dispersion cm<sup>3</sup>/: 3,0  
1000H.: (3,0)

### Full-load speed regulation:

Speed 1/min: 1550  
Del. quantity cm<sup>3</sup>/  
1000H.: 26,0...38,0  
KSB solenoid-operated  
valve volt: 12,0

### Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 70,0  
KSB solenoid-operated  
valve volt: 12,0

### Inspection-pump test specifications Test specifications in parentheses

### Timing-device characteristic:

1st speed 1/min: 700  
TD travel mm: 1,5...2,9  
mm: (1,4...3,0)

KSB solenoid-operated  
valve volt: -  
2nd speed 1/min: 700  
TD travel mm: 0,1...0,9  
mm: (0,0...1,2)

KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1100  
TD travel mm: -  
mm: (2,0...3,4)

KSB solenoid-operated  
valve volt: 12,0

4th speed 1/min: 1350  
TD travel mm: 3,6...4,4  
mm: (3,3...4,7)  
KSB solenoid-operated  
valve volt: 12,0  
5th speed 1/min: 1500  
TD travel mm: 3,7...4,5  
mm: (3,4...4,8)  
KSB solenoid-operated  
valve volt: 12,0

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Supply-pump  
pressure bar: 3,5...4,1  
KSB solenoid-operated  
valve volt: 12,0  
2nd speed 1/min: 1100  
Supply-pump  
pressure bar: 4,9...5,5  
KSB solenoid-operated  
valve volt: 12,0  
3rd speed 1/min: 1500  
Supply-pump  
pressure bar: 6,4...7,0  
KSB solenoid-operated  
valve volt: 12,0

Overflow quantity at overflow valve:

1st speed 1/min: 600  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 1500  
KSB solenoid-operated  
valve volt: 12,0  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1630  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
2nd speed 1/min: 1570  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: 14,0...26,0  
1000H.: -  
3rd speed 1/min: 1550  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (26,0...38,0)  
4th speed 1/min: 1500

KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: 41,5...44,5  
1000H.: (40,0...46,0)  
5th speed 1/min: 1100  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: 43,5...46,5  
1000H.: (42,0...48,0)  
6th speed 1/min: 800  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: 32,0...34,0  
1000H.: -  
7th speed 1/min: 600  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (21,0...26,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 300  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: -  
1000H.: 8,0...16,0  
2nd speed 1/min: 350  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: 3,0...9,0  
1000H.: (1,5...10,5)  
3rd speed 1/min: 430  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 300  
KSB solenoid-operated  
valve volt: 12,0  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 29,0  
2nd speed 1/min: 400  
KSB solenoid-operated  
valve volt: 12,0

Del. quantity cm<sup>3</sup>: -  
max. 100GH : 35,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: -
KF	mm	: K-0T
MS	mm	: 1,2...1.45
SVS max.	mm	: 3,1
XK	mm	: 17,0...19,0
XL	mm	: 11,9...15,3

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : STE 3,1 B  
Edition : 13. 1.88  
replaces : -  
Calibrating oil : ISO 4113  
Injection pump : VE 4/11F1200 R94-3  
Type number : O 460 414 061

Customer-specific information  
Customer : STEYR

Engine : WD 408.45

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : -  
(from BDC) : -

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000  
Setting value mm: 5,3...5,7

Supply-pump pressure:

Speed 1/min: 1000  
Setting value bar: 5,2...5,8

Full-load del. w/out charge press.:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 63,0...64,0  
Dispersion cm<sup>3</sup>/  
1000H.: 3,5

Low-idle speed regulation:

Speed 1/min: 300  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...17,0  
Dispersion cm<sup>3</sup>/  
1000H.: 3,5

Full-load speed regulation:

Speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/  
1000H.: 14,0...20,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 70,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
TD travel mm: 0,9...1,7  
mm: (0,6...2,0)  
2nd speed 1/min: 1000  
TD travel mm: 5,3...5,7  
mm: (4,8...6,2)  
3rd speed 1/min: 1200  
TD travel mm: 7,0...7,8  
mm: (6,7...8,1)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 3,3...3,9  
2nd speed 1/min: 1000  
Supply-pump  
pressure bar: 5,2...5,8  
3rd speed 1/min: 1200  
Supply-pump  
pressure bar: 6,1...6,7

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2400



Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1350  
Del. quantity cm<sup>3</sup>/: 0...2,6  
1000H.: -  
2nd speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/: 14,0...20,0  
1000H.: (13,0...21,0)  
3rd speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 60,5...63,5  
1000H.: (59,7...64,3)  
4th speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 63,0...64,0  
1000H.: (61,2...65,8)  
5th speed 1/min: 800  
Del. quantity cm<sup>3</sup>/: 61,5...64,5  
1000H.: -  
6th speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 57,0...60,0  
1000H.: (56,0...61,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Idle delivery:

1st speed 1/min: 380  
Del. quantity cm<sup>3</sup>/: 0...2,6  
1000H.: -  
2nd speed 1/min: 330  
Del. quantity cm<sup>3</sup>/: 3,0...9,0  
1000H.: (2,0...10,0)  
3rd speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: 13,0..17,0  
1000H.: (11,0..19,0)

Automatic starting fuel delivery:

1st speed 1/min: 170  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 75,0

2nd speed 1/min: 250  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 60,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,3...5,7  
MS mm : 0,8...1,2

SVS max. mm : 3,3  
XK mm : 17,0...19,0  
XL mm : 11,3...14,7

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 3,9 E3  
Compl. date: : 12.02.88  
Edition : 12.02.88  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/12F1000 R226-6  
Type number : 0 460 424 039  
  
Customer-specific information  
Customer : CUMMINS/GB  
  
Engine : 4 BT 390 IND

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 027  
  
Opening  
pressure bar : 250...253  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : 0,3  
(from BDC) : +-0,02 (0,04)  
  
Start of delivery block  
Piston stroke mm : 1,8  
mm : +-0,02 (0,06)  
  
Outlet : A

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900  
Setting value mm: 2,4...2,8

Supply-pump pressure:

Speed 1/min: 900  
Setting value bar: 4,0...4,6  
  
Full-load del. w/out charge press.:

Speed 1/min : 900  
Del. quantity cm3/  
1000H.: 67,5...68,5  
Dispersion cm3/: 4,0  
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 350  
Del. quantity cm3/  
1000H.: 3,0...9,0  
Dispersion cm3/: 5,5  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1060  
Del. quantity cm3/  
1000H.: 50,5...56,5

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm3/1000H.: 70,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 750  
TD travel mm: 1,3...2,1  
mm: (1,0...2,4)  
2nd speed 1/min: 900  
TD travel mm: -  
mm: (1,9...3,3)  
3rd speed 1/min: 1000  
TD travel mm: 2,7...3,5  
mm: (2,4...3,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2,2...2,8  
2nd speed 1/min: 900  
Supply-pump  
pressure bar: 4,0...4,6  
3rd speed 1/min: 1000  
Supply-pump  
pressure bar: 4,4...5,0

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
2nd speed 1/min: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 1060  
Del. quantity cm<sup>3</sup>/: 50,5...56,5  
1000H.: (47,5...59,5)  
2nd speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 1140  
Del. quantity cm<sup>3</sup>/: 0,0...15,0  
1000H.: -  
4th speed 1/min: 1100  
Del. quantity cm<sup>3</sup>/: 15,0...55,0  
1000H.: -  
5th speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 65,5...68,5  
1000H.: (64,0...70,0)  
6th speed 1/min: 900  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (65,0...71,0)  
7th speed 1/min: 750  
Del. quantity cm<sup>3</sup>/: 70,0...74,0  
1000H.: (68,0...76,0)  
8th speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 70,0...78,0  
1000H.: (68,0...80,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1000  
Del. quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: 0..3

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 3,0...9,0  
1000H.: (1,0...11,0)  
2nd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 90,0  
2nd speed 1/min: 240  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 90,0

Shutoff electromagnet:

Cut-in  
min. voltage : 20,0  
Rated voltage : 24,0

Mounting and assembly dimensions:

KF mm : 5,0...5,4  
MS mm : 1,1...1,5  
SVS max. mm : 3,0  
XK mm : 18,8...20,8  
XL mm : 10,3...13,7

Remarks: :

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 S4  
Compl. date: : 12.02.88  
Edition : 12.02.88  
replaces : 11.12.86  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1000 R225-11  
Type number :

Customer-specific information  
Customer : CDC

Engine : 6BT-5,9 CAS I

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 027

Opening  
pressure bar : 250...253

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,3  
(from BDC) : +0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750  
Setting value mm: 3,3...3,7

Supply-pump pressure:

Speed 1/min: 750  
Setting value bar: 3,5...4,1

Full-load del. w/out charge press.:

Speed 1/min: 750  
Del. quantity cm<sup>3</sup>/  
1000H.: 46,5...47,5  
Dispersion cm<sup>3</sup>/  
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 365  
Del. quantity cm<sup>3</sup>/  
1000H.: 8,0...14,0  
Dispersion cm<sup>3</sup>/  
1000H.: (7,0)

Full-load speed regulation:

Speed 1/min: 1050  
Del. quantity cm<sup>3</sup>/  
1000H.: 30,0...36,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 40,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 500  
TD travel mm: 1,1...1,9  
mm: (0,8...2,2)  
2nd speed 1/min: 750  
TD travel mm: 3,3...3,7  
mm: (2,8...4,2)  
3rd speed 1/min: 1000  
TD travel mm: 5,3...6,1  
mm: (5,0...6,4)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Supply-pump  
pressure bar: 2,4...3,0  
bar: -  
2nd speed 1/min: 750  
Supply-pump  
pressure bar: 3,5...4,1  
bar: -  
3rd speed 1/min: 1000  
Supply-pump  
pressure bar: 4,6...5,2  
bar: -

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 1000  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1050  
Del. quantity cm3/: 30,0...36,0  
1000H.: (27,0...39,0)  
2nd speed 1/min: 1150  
Del. quantity cm3/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 1100  
Del. quantity cm3/: 0,0...15,0  
1000H.: -  
4th speed 1/min: 1060  
Del. quantity cm3/: 15,0...45,0  
1000H.: -  
5th speed 1/min: 1000  
Del. quantity cm3/: 44,5...47,5  
1000H.: (43,0...49,0)  
6th speed 1/min: 900  
Del. quantity cm3/: 46,5...49,5  
1000H.: (44,5...51,5)  
7th speed 1/min: 750  
Del. quantity cm3/: -  
1000H.: (44,0...50,0)  
8th speed 1/min: 500  
Del. quantity cm3/: 33,0...41,0  
1000H.: (31,0...43,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1000  
Del. quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 365  
ELAB volt: -  
Del. quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 365  
Del. quantity cm3/: 8,0...14,0  
1000H.: (6,0...16,0)  
2nd speed 1/min: 450  
Del. quantity cm3/: 0,0...4,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 200  
Del. quantity cm3/: -45,0  
ind. 1000H.: -

2nd speed 1/min: 370  
Del. quantity cm3/: -  
max. 1000H.: 50,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

KF mm : 5,1...5,3  
MS mm : 1,1...1,3  
SVS max. mm : 1,2  
XK mm : 18,8...20,8  
XL mm : 9,1...12,5

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 5,8 T1  
Compl. date: : 01.04.86  
Edition : 06.05.88  
replaces : 01.04.86  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1350 R64-1  
Type number : 0 460 426 083

Customer-specific information  
Customer : IHC

Engine : D 358/PC 11

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,20

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1150  
Setting value mm: 5,2...5,6

Supply-pump pressure:

Speed 1/min: 1150  
Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

Speed 1/min : 1150  
Del. quantity cm3/  
1000H.: 84,0...85,0

Dispersion cm3/: 3,5  
1000H.: (4,5)

Low-idle speed regulation:

Speed 1/min: 500  
Del. quantity cm3/  
1000H.: 14,5...20,5  
Dispersion cm3/: 3,5  
1000H.: (4,5)

Full-load speed regulation:

Speed 1/min: 1430  
Del. quantity cm3/  
1000H.: 44,0...50,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm3/1000H.: 100

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
TD travel mm: 1,6...2,4  
mm: (1,3...2,7)

2nd speed 1/min: 1150  
TD travel mm: -  
mm: (4,7...6,1)

3rd speed 1/min: 1300  
TD travel mm: 5,3...6,1  
mm: (5,0...6,4)

Supply-pump pressure characteristic:

1st speed 1/min: 400  
Supply-pump  
pressure bar: 2,7...3,3  
bar: -

2nd speed 1/min: 1300  
Supply-pump  
pressure bar: 6,0...6,6  
bar: -

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Overflow : 55...138  
quantity cm3/10s: (40...153)

2nd speed 1/min: 1350  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1540  
 Del. quantity cm<sup>3</sup>/: 0,0...2,0  
 1000H.: -  
 2nd speed 1/min: 1480  
 Del. quantity cm<sup>3</sup>/: 9,0...17,0  
 1000H.: (8,0...18,0)  
 3rd speed 1/min: 1430  
 Del. quantity cm<sup>3</sup>/: -  
 1000H.: (42,0...52,0)  
 4th speed 1/min: 1300  
 Del. quantity cm<sup>3</sup>/: 80,0...83,0  
 1000H.: (78,5...84,5)  
 5th speed 1/min: 1150  
 Del. quantity cm<sup>3</sup>/: -  
 1000H.: (81,5...87,5)  
 6th speed 1/min: 800  
 Del. quantity cm<sup>3</sup>/: 77,0...81,0  
 1000H.: (76,0...82,0)  
 7th speed 1/min: 500  
 Del. quantity cm<sup>3</sup>/: 65,0...70,0  
 1000H.: (63,7...71,3)

Zero delivery (stop):

Mech. shutoff:

Del. quantity cm<sup>3</sup>/: 1150  
 1000H.: -

Idle delivery:

1st speed 1/min: 500  
 Del. quantity cm<sup>3</sup>/: -  
 1000H.: (12,5...22,5)  
 2nd speed 1/min: 520  
 Del. quantity cm<sup>3</sup>/: 4,0...12,5  
 1000h.: -  
 3rd speed 1/min: 570  
 Del. quantity cm<sup>3</sup>/: 0,0...1,0  
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 250  
 Del. quantity cm<sup>3</sup>/: -  
 ind. 1000H: 100

2nd speed 1/min: 350  
 Del. quantity cm<sup>3</sup>/: -  
 max. 1000H : 80,0

Shutoff electromagnet:

Cut-in  
 min. voltage : -  
 Rated voltage : -

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,7...5,9
MS	mm	: 1,0...1,2
SVS max.	mm	: 6,0
XK	mm	: 20,2...22,2
XL	mm	: 15,8...19,8

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 C  
Edition : 29.07.87  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1300 R240  
Type number : 0 460 426 084  
  
Customer-specific information  
Customer : PERKINS  
  
Engine : T6 60 CC TRU

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 020  
  
Opening  
pressure bar : 172...175  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : 0,25  
(from BDC) : +-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200  
Charge press. hPa: 1000  
Setting value mm: 1,8...2,2

Supply-pump pressure:

Speed 1/min: 1200  
Charge press. hPa: 1000  
Setting value bar: 6,9...7,5

Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 99,0...100,0  
Dispersion cm<sup>3</sup> / : 5,0  
1000H.: (5,0)

Full-load del. w/out charge press.:

Speed 1/min : 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 87,0...88,0

Low-idle speed regulation:

Speed 1/min: 300  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 16,5...20,5  
Dispersion cm<sup>3</sup> / : 5,0  
1000H.: (5,0)

Full-load speed regulation:

Speed 1/min: 1450  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 47,0...53,0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 120,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
TD travel mm: 0,3...1,1  
mm: (0,0...1,4)  
2nd speed 1/min: 1200  
Charge press. hPa: 1000  
TD travel mm: -  
mm: (1,3...2,7)  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 2,0...2,8  
mm: (1,7...3,1)

Supply-pump pressure characteristic:

1st speed 1/min: 500



Charge press. hPa: 1000  
Supply-pump pressure bar: 3,9...4,5  
2nd speed 1/min: 1200  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6,9...7,5  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow quantity cm<sup>3</sup>/10s: (41...83)  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: (55...138)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 450  
LDA stroke mm: 6,3  
Del. quantity cm<sup>3</sup>/: 95,0...96,0  
1000H.: (92,5...98,5)  
2nd speed 1/min: 1550  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0,0...7,0  
1000H.: -  
3rd speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 13,5...21,5  
1000H.: (10,5...24,5)  
4th speed 1/min: 1450  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: -  
1000H.: 44,0...56,0  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 95,5...98,0  
1000H.: (93,5...99,5)  
6th speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 99,5...102,5  
1000H.: (98,0...104,0)  
7th speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (96,5...102,5)  
8th speed 1/min: 700  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (84,5...90,5)  
9th speed 1/min: 500

Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 80,0...83,0  
1000H.: (78,5...84,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/: 0,3  
1000H.: -

Electr. shutoff:

Speed 1/min: 300  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (13,5...23,5)  
2nd speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 4,5...10,5  
1000H.: (2,5...12,5)  
3rd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0,0...2,6

Automatic starting fuel delivery:

1st speed 1/min: 150  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H.: 95,0

2nd speed 1/min: 230  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H.: 85,0

Shutoff electromagnet:

Cut-in min. voltage : 20,0  
Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : K-0T  
MS mm : 0,6...1,0  
SVS max. mm : -  
XK mm : 17,0...19,0  
XL mm : 12,8...16,2

Remarks: :

Correction at adjusting nut (46)



## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 A  
Compl. date: : 29.07.87  
Edition : 18.04.88  
replaces : 12.12.86  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R241  
Type number : 0 460 426 085

Customer-specific information  
Customer : PERKINS

Engine : T6 60

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
pressure bar : 172...175

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,3  
(from BDC) : +0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 7,2...7,8

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Full-load del. with charge press.:

Speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 92,5...93,5  
Dispersion cm<sup>3</sup>/  
1000H.: (3,5)

Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 81,5...84,5

Low-idle speed regulation:

Speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...17,0  
Dispersion cm<sup>3</sup>/  
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 52,0...58,0

Start:

Speed 1/min: 100  
mind cm<sup>3</sup>/1000H.: 90,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 950  
Charge press. hPa: 1000  
TD travel mm: 0,5...1,1  
mm: (0,1...1,5)

2nd speed 1/min: 1100  
Charge press. hPa: 1000  
TD travel mm: -  
mm: (1,6...3,0)

3rd speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 2,9...3,7  
mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 700  
Charge press. hPa: 1000

Supply-pump  
pressure bar: 5,5...6,1  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 7,2...7,8  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Supply-pump  
pressure bar: 8,0...8,6

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting  
point hPa: 350  
LDA stroke mm: 6,1  
Del. quantity cm3/: 87,5...88,5  
1000H.: (85,0...91,0)  
2nd speed 1/min: 1530  
Charge press. hPa: 1000  
Del. quantity cm3/: -  
1000H.: 0,0...3,0  
3rd speed 1/min: 1480  
Charge press. hPa: 1000  
Del. quantity cm3/: 8,0...16,0  
1000H.: (5,0...19,0)  
4th speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm3/: 52,0...58,0  
1000H.: (49,0...61,0)  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del. quantity cm3/: 83,0...86,0  
1000H.: (81,5...87,5)  
6th speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm3/: 91,0...94,0  
1000H.: (89,5...95,5)  
7th speed 1/min: 700  
Charge press. hPa: -  
Del. quantity cm3/: 81,5...84,5  
1000H.: (80,0...86,0)  
8th speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm3/: 73,5...76,5  
1000H.: (72,0...78,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1300  
Del. quantity cm3/: 0..3  
1000H.: -

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del. quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm3/: 13,0..17,0  
1000H.: (10,0..20,0)  
2nd speed 1/min: 400  
Del. quantity cm3/: 4,0...10,0  
1000H.: (2,0...12,0)  
3rd speed 1/min: 450  
Del. quantity cm3/: 0,0...2,6  
1000H.: (0,0...2,6)

Automatic starting fuel delivery:

1st speed 1/min: 150  
Charge press. hPa: -  
Del. quantity cm3/: -  
ind. 1000H: 100,0  
2nd speed 1/min: 250  
Charge press. hPa: -  
Del. quantity cm3/: -  
max. 1000H : 70,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : K-0T  
MS mm : 1,1..1,35  
SVS max. mm : 6,0  
XK mm : 20,0...22,0  
XL mm : 10,5...13,9

Remarks:

:

Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 A 1  
Compl. date: : 08.09.86  
Edition : 22.04.88  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R241-1  
Type number : 0 460 426 088

Customer-specific information  
Customer : PERKINS

Engine : T6 60 DERATE

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
pressure bar : 172...175

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,3  
(from BDC): +-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 7,2...7,8

Full-load del. with charge press.:

Speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 83,0...84,0  
Dispersion cm<sup>3</sup> / : 3,5  
1000H.: (3,5)

Full-load del. w/out charge press.:

Speed 1/min : 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 76,0...77,0

Low-idle speed regulation:

Speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...17,0  
Dispersion cm<sup>3</sup> / : 3,5  
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 52,0...58,0

Start:

Speed 1/min: 100  
mind cm<sup>3</sup>/1000H.: 88,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 950  
Charge press. hPa: 1000  
TD travel mm: 0,5...1,1  
mm: (0,1...1,5)  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
TD travel mm: -  
mm: (1,6...3,0)  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 3,0...3,6  
mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000

Supply-pump pressure bar: 4,7...5,3  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7,2...7,8  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Supply-pump pressure bar: 8,0...8,6

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 250  
LDA stroke mm: 4,0  
Del. quantity cm<sup>3</sup>/1000H.: 80,5...81,5  
2nd speed 1/min: 1530  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...3,0  
3rd speed 1/min: 1480  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 12,0...20,0  
4th speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 52,0...58,0  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 74,0...77,0  
6th speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 82,0...85,0  
7th speed 1/min: 700  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000H.: 76,0...77,0  
8th speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000H.: 68,5...71,5

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/1000H.: 0..3

Electr. shutoff:

Speed 1/min: 350  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/1000H.: 13,0..17,0  
2nd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000H.: 4,0...10,0  
3rd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...2,6

Automatic starting fuel delivery:

1st speed 1/min: 150  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/ind. 1000H: 100,0  
2nd speed 1/min: 250  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/max. 1000H : 70,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : K-0T  
MS mm : 1,0...1,4  
SVS max. mm : 6,0  
XK mm : 20,0...22,0  
XL mm : 10,4...13,8

Remarks:

Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 C2  
Edition : 19.04.88  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R240-2  
Type number : 0 460 426 094

Customer-specific information  
Customer : PERKINS

Engine : T6 60 CC TRU

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
pressure bar : 172...175

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,25  
(from BDC) : +-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

#### Timing-device travel:

Speed 1/min: 1200  
Charge press. hPa: 1000  
Setting value mm: 1,8...2,2

#### Supply-pump pressure:

Speed 1/min: 1200  
Charge press. hPa: 1000  
Setting value bar: 6,9...7,5

#### Full-load del. with charge press.:

Speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 99,0...100,0  
Dispersion cm<sup>3</sup>/  
1000H.: 5,0  
1000H.: (5,0)

#### Full-load del. w/out charge press.:

Speed 1/min: 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 87,0...88,0

#### Low-idle speed regulation:

Speed 1/min: 300  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 16,5...20,5  
Dispersion cm<sup>3</sup>/  
1000H.: 5,0  
1000H.: (5,0)

#### Full-load speed regulation:

Speed 1/min: 1450  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 47,0...53,0

#### Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 120,0

Inspection-pump test specifications  
Test specifications in parentheses

#### Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
TD travel mm: 0,3...1,1  
mm: (0,0...1,4)

2nd speed 1/min: 1200  
Charge press. hPa: 1000  
TD travel mm: -  
mm: (1,3...2,7)

3rd speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 2,0...2,8  
mm: (1,7...3,1)

#### Supply-pump pressure characteristic:

1st speed 1/min: 500

Charge press. hPa: 1000  
Supply-pump pressure bar: 3,9...4,5  
2nd speed 1/min: 1200  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6,9...7,5  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 450  
LDA stroke mm: 6,3  
Del. quantity cm<sup>3</sup>/1000H.: 95,0...96,0  
2nd speed 1/min: 1550  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...7,0  
3rd speed 1/min: 1500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 13,5...21,5  
4th speed 1/min: 1450  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 44,0...56,0  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 95,5...98,0  
6th speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 99,5...102,5  
7th speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 96,5...102,5  
8th speed 1/min: 700  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000H.: 84,5...90,5  
9th speed 1/min: 500

K03

Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000H.: 80,0...83,0  
(78,5...84,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/1000H.: 0..3

Idle delivery:

1st speed 1/min: 300  
Del. quantity cm<sup>3</sup>/1000H.: (13,5...23,5)  
2nd speed 1/min: 350  
Del. quantity cm<sup>3</sup>/1000H.: 4,5...10,5  
3rd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...2,6

Automatic starting fuel delivery:

1st speed 1/min: 150  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/ind. 1000H.: 95,0  
2nd speed 1/min: 230  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/max. 1000H.: 85,0

Mounting and assembly dimensions:

Designation

K	mm	:	-
KF	mm	:	K-0T
MS	mm	:	0,6...1,0
SVS max.	mm	:	-
XK	mm	:	17,0...19,0
XL	mm	:	12,8...16,2

Remarks:

Correction at adjusting nut (46)



# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 A2  
Compl. date: : 12.01.88  
Edition : 19.04.88  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1300 R241-2  
Type number : 0 460 426 095

Customer-specific information  
Customer : PERKINS

Engine : T6 60 TRUCK

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 020

Opening  
pressure bar : 172...175

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,3  
(from BDC): +-0,02 (0,04)

Injection-pump setting values  
test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 7,2...7,8

K04

Full-load del. with charge press.:

Speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 92,5...93,5  
Dispersion cm<sup>3</sup>/ : 3,5  
1000H : (3,5)

Full-load del. w/out charge press.:

Speed 1/min : 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 81,5...84,5

Low-idle speed regulation:

Speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...17,0  
Dispersion cm<sup>3</sup>/ : 3,5  
1000H.: (3,5)

Full-load speed regulation:

Speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 52,0...58,0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
mind cm<sup>3</sup>/1000H.: 90,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 950  
Charge press. hPa: 1000  
TD travel mm: 0,5...1,1  
mm: (0,1...1,5)  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
TD travel mm: -  
mm: (1,6...3,0)  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 2,9...3,7  
mm: (2,6...4,0)

Supply-pump pressure characteristic:

1st speed 1/min: 700

Charge press. hPa: 1000  
Supply-pump pressure bar: 5,5...6,1  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7,2...7,8  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Supply-pump pressure bar: 8,0...8,6

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: (41...83)  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: (55...138)  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 350  
LDA stroke mm: 6,1  
Del. quantity cm<sup>3</sup>/: 87,5...88,5  
1000H.: (85,0...91,0)  
2nd speed 1/min: 1530  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 1480  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 8,0...16,0  
1000H.: (5,0...19,0)  
4th speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (49,0...61,0)  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 83,0...86,0  
1000H.: (81,5...87,5)  
6th speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (90,0...96,0)  
7th speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 91,0...94,0  
1000H.: (89,5...95,5)  
8th speed 1/min: 700  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 81,5...84,5  
1000H.: (80,0...86,0)  
9th speed 1/min: 500

K05

Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 73,5...76,5  
1000H.: (72,0...78,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/: 0...3  
1000H.: -

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: 13,0...17,0  
1000H.: (10,0...20,0)  
2nd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 4,0...10,0  
1000H.: (2,0...12,0)  
3rd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0,0...2,6  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H.: 100,0  
2nd speed 1/min: 250  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H.: 70,0

Mounting and assembly dimensions:

Designation mm : -  
K mm : K-0T  
KF mm : 1,1...1,35  
MS mm : 6,0  
SVS max. mm : 20,0...22,0  
XK mm : 10,5...13,9  
XL mm : 10,5...13,9

Remarks:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : PER 6,0 A3  
Compl. date: : 12.01.88  
Edition : 19.04.88  
replaces : -  
Calibrating oil : ISO 4113  
  
Injection pump : VE 6/12F1300 R241-3  
Type number : 0 460 426 096  
  
Customer-specific information  
Customer : PERKINS  
  
Engine : T6.60 DERATE BEDFORD

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 020  
  
Opening  
pressure bar : 172...175  
  
Test inj. tubing : 1 688 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : 0,3  
(from BDC) : +-0,02 (0,04)

Injection-pump setting values  
Test specifications in parentheses

### Timing-device travel:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value mm: 2,1...2,5

### Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 7,2...7,8

K06

### Full-load del. with charge press.:

Speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 83,0...84,0  
Dispersion cm<sup>3</sup> / : 3,5  
1000H : (3,5)

### Full-load del. w/out charge press.:

Speed 1/min : 700  
Del. quantity cm<sup>3</sup>/  
1000H.: 76,0...77,0

### Low-idle speed regulation:

Speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...17,0  
Dispersion cm<sup>3</sup> / : 3,5  
1000H.: (3,5)

### Full-load speed regulation:

Speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 52,0...58,0

### Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 88,0

Inspection-pump test specifications  
Test specifications in parentheses

### Timing-device characteristic:

1st speed 1/min: 950  
Charge press. hPa: 1000  
TD travel mm: 0,5...1,1  
mm: (0,1...1,5)  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
TD travel mm: -  
mm: (1,6...3,0)  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
TD travel mm: 3,0...3,6  
mm: (2,6...4,0)

### Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 4,7...5,3  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7,2...7,8  
3rd speed 1/min: 1300  
Charge press. hPa: 1000  
Supply-pump pressure bar: 8,0...8,6  
bar: -

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow quantity cm<sup>3</sup>/10s: (41...83)  
2nd speed 1/min: 1300  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: (55...138)  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 250  
LBA stroke mm: 4,0  
Del. quantity cm<sup>3</sup>/: 80,5...81,5  
1000H.: (78,0...84,0)  
2nd speed 1/min: 1530  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 1480  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 12,0...20,0  
1000H.: (9,0...23,0)  
4th speed 1/min: 1400  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (49,0...61,0)  
5th speed 1/min: 1300  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 74,0...77,0  
1000H.: (72,5...78,5)  
6th speed 1/min: 1000  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (80,5...86,5)  
7th speed 1/min: 700  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/: 82,0...85,0  
1000H.: (80,5...86,5)  
8th speed 1/min: 700  
Charge press. hPa: -

Del. quantity cm<sup>3</sup>/: 76,0...77,0  
1000H.: (73,5...79,5)  
9th speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: 68,5...71,5  
1000H.: (67,0...73,0)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1300  
Del. quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Idle delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (10,0..20,0)  
2nd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 4,0...10,0  
1000H.: (2,0...12,0)  
3rd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: 0,0...2,6  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 150  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 100,0  
2nd speed 1/min: 250  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 70,0

Mounting and assembly dimensions:

Designation  
K mm : -  
KF mm : K-0T  
MS mm : 1,1..1,35  
SVS max. mm : 6,0  
XK mm : 20,0...22,0  
XL mm : 10,4...13,8

Remarks:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : CUM 5,9 U9  
Compl. date: : 29.10.87  
Edition : 04.11.87  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE 6/12F1400 R195-2  
Type number : 0 460 426 108  
  
Customer-specific information  
Customer : CDC  
  
Engine : 6 BTA-3,9 I

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0,35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 027  
  
Opening  
pressure bar : 250...253  
  
Perforated-plate  
diameter mm : 0,5  
  
Test inj. tubing : 1 680 750 017  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840  
  
Start of delivery  
Prestroke mm : 0,3  
(from BDC) : +-0,02 (0,04)  
  
Start of delivery block  
Piston stroke mm : 2,4  
mm : +-0,02 (0,06)  
  
Outlet : D  
  
Injection-pump setting values  
Test specifications in parentheses  
  
Timing-device travel:  
  
Speed 1/min: 1100

K08

Charge press. hPa: 1000  
Setting value mm: 1,5...1,9

Supply-pump pressure:

Speed 1/min: 1100  
Charge press. hPa: 1000  
Setting value bar: 6,3...6,9

Full-load del. with charge press.:

Speed 1/min: 850  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 82,5...83,5  
Dispersion cm<sup>3</sup>/  
1000H : (4,5)

Full-load del. w/out charge press.:

Speed 1/min : 500  
Del. quantity cm<sup>3</sup>/  
1000H.: 73,0...74,0

Low-idle speed regulation:

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000H.: 8,0...14,0  
Dispersion cm<sup>3</sup>/  
1000H.: 5,5

Full-load speed regulation:

Speed 1/min: 1510  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/  
1000H: 56,0...62,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 100

Load-dependent start of delivery:

Speed 1/min: -

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 1000  
TD travel mm: 0,8...1,6  
mm: (0,5...1,9)  
2nd speed 1/min: 1100

Charge press. hPa: 1000  
TD travel mm: 1,5...1,9  
mm: (1,0...2,4)  
3rd speed 1/min: 1400  
Charge press. hPa: 1000  
TD travel mm: 2,7...3,5  
mm: (2,4...3,8)

Supply-pump pressure characteristic:

1st speed 1/min: 500  
Charge press. hPa: 1000  
Supply-pump pressure bar: 3,5...4,1  
2nd speed 1/min: 1100  
Charge press. hPa: 1000  
Supply-pump pressure bar: 6,3...6,9  
3rd speed 1/min: 1400  
Charge press. hPa: 1000  
Supply-pump pressure bar: 7,7...8,3

Overflow quantity at overflow valve:

1st speed 1/min: 500  
Charge press. hPa: -  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
(26...98)  
2nd speed 1/min: 1400  
Charge press. hPa: 1000  
Overflow quantity cm<sup>3</sup>/10s: 55...138  
(40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 700  
Charge-air pressure-setting point hPa: 550  
LDA stroke mm: 5,0  
Del. quantity cm<sup>3</sup>/1000H.: 79,5...80,5  
(76,0...84,0)  
2nd speed 1/min: 1650  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...3,0  
3rd speed 1/min: 1600  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...15,0  
4th speed 1/min: 1550  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 15,0...55,0  
5th speed 1/min: 1510  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 56,0...62,0  
(53,0...65,0)  
6th speed 1/min: 1400  
Charge press. hPa: 1000

Del. quantity cm<sup>3</sup>/1000H.: 75,5...78,5  
(74,0...80,0)  
7th speed 1/min: 1100  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 80,0...83,0  
(78,0...85,0)  
8th speed 1/min: 850  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 82,5...83,5  
(80,0...86,0)  
9th speed 1/min: 700  
Charge press. hPa: 550  
Del. quantity cm<sup>3</sup>/1000H.: 79,5...80,5  
(76,0...84,0)  
10th speed 1/min: 500  
Charge press. hPa: 1000  
Del. quantity cm<sup>3</sup>/1000H.: 98,0...106,0  
11th speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/1000H.: 73,0...74,0  
(69,5...77,5)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 1400  
Del. quantity cm<sup>3</sup>/1000H.: 0...3

Electr. shutoff:

Speed 1/min: 375  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/1000H.: 8,0...14,0  
(6,0...16,0)  
2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...4,0

Shutoff electromagnet:

Cut-in min. voltage : 10  
Rated voltage : 12

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : K-0T  
MS mm : 0.8...1,2  
SVS max. mm : 3,6

XK            mm : 19,7...19,9  
XL            mm : 14,0...17,4

Remarks:

:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W3  
Compl. date: : 09.02.88  
Edition : 09.02.88  
replaces : 07.07.87  
Calibrating oil : ISO4113

Injection pump : VE 4/ 9F2250 R149  
Type number : 0 460 494 138

Customer-specific information  
Customer : VW

Engine : 086T

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value bar: 4,6...5,2

Full-load del. with charge press.:

Speed 1/min: 1500

K11

Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000H.: 43,5...44,5  
Dispersion cm<sup>3</sup>/  
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 23,5...24,5

Low-idle speed regulation:

Speed 1/min: 475  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 6,0...10,0  
Dispersion cm<sup>3</sup>/  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2525  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000H: 10,0...14,0

Start:

Speed 1/min: 100  
Charge press. hPa: -  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 750  
TD travel mm: 1,8...2,6  
mm: (1,5...2,9)  
2nd speed 1/min: 1500  
Charge press. hPa: 750  
TD travel mm: -  
mm: (3,3...4,7)  
3rd speed 1/min: 2250  
Charge press. hPa: 750  
TD travel mm: 6,1...6,9  
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 2,5...3,1



2nd speed 1/min: 2250  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Charge press. hPa: -  
Overflow : 55...70  
quantity cm<sup>3</sup>/10s: (50...75)  
2nd speed 1/min: 2250  
Charge press. hPa: 750  
Overflow : 82...112  
quantity cm<sup>3</sup>/10s: (77...117)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000  
Charge-air pressure-setting  
point hPa: 300  
LDA stroke mm: 4,5  
Del. quantity cm<sup>3</sup>/: 33,5...34,5  
1000H.: (31,0...37,0)

2nd speed 1/min: 2750  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -

3rd speed 1/min: 2525  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (8,0...16,0)

4th speed 1/min: 2425  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 22,0...32,0  
1000H.: (21,0...33,0)

5th speed 1/min: 2250  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 37,5...39,5  
1000H.: (36,3...40,7)

6th speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (41,8...46,2)

7th speed 1/min: 600  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (21,0...27,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 475  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

K12

1st speed 1/min: 475  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (4,0...12,0)  
2nd speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 0,0...6,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 22,0

2nd speed 1/min: 500  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H: 30,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,1...1,5
SVS max.	mm	: 3,8
XK	mm	: 18,4...20,4
XL	mm	: 8,6...12,0

Remarks:

:

Correction at adjusting nut (46)

## BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 E  
Compl. date: : 28.10.87  
Edition : 22.04.88  
replaces : 18.02.88  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2000 160  
Type number : 0 460 494 149

Customer-specific information  
Customer : VW

Engine : 068.5-1,6L

### TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 3,2...3,6

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value bar: 4,6...5,2

Full-load del. with charge press.:

Speed 1/min: 1500

K13

Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/  
1000H.: 43,5...44,5  
Dispersion cm<sup>3</sup>/ : 2,5  
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del.quantity cm<sup>3</sup>/  
1000H.: 25,5...26,5

Low-idle speed regulation:

Speed 1/min: 475  
Del.quantity cm<sup>3</sup>/  
1000H.: 6,0...10,0  
Dispersion cm<sup>3</sup>/ : 2,0  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2110  
Charge press. hPa: 750  
Del.quantity cm<sup>3</sup>/  
1000H: 10,0...14,0

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 750  
TD travel mm: 1,2...2,0  
mm: (0,9...2,3)  
2nd speed 1/min: 1500  
Charge press. hPa: 750  
TD travel mm: 3,2...3,6  
mm: (2,7...4,1)  
3rd speed 1/min: 2000  
Charge press. hPa: 750  
TD travel mm: 5,2...6,0  
mm: (4,9...6,3)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 750  
Supply-pump  
pressure bar: 2,5...3,1  
bar: -  
2nd speed 1/min: 1500

Charge press. hPa: 750  
Supply-pump pressure bar: 4,6...5,2  
bar: -  
3rd speed 1/min: 2000  
Charge press. hPa: 750  
Supply-pump pressure bar: 5,7...6,3  
bar: -

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2000  
Charge press. hPa: 750  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000  
Charge-air pressure-setting point hPa: 300  
LDA stroke mm: 4,5  
Del. quantity cm<sup>3</sup>/: 34,5...35,5  
1000H.: (32,0...38,0)  
2nd speed 1/min: 2110  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 10,0...14,0  
1000H.: -  
3rd speed 1/min: 2150  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 0,0...6,0  
1000H.: -  
4th speed 1/min: 2130  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (0,0...12,0)  
5th speed 1/min: 2100  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 5,0...29,0  
1000H.: -  
6th speed 1/min: 2060  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 29,0...53,0  
1000H.: -  
7th speed 1/min: 2000  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 39,5...40,5  
1000H.: (38,3...42,7)  
8th speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 43,5...44,5  
1000H.: (41,8...46,2)  
9th speed 1/min: 600  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/: 32,0...35,0  
1000H.: (30,5...36,5)

10th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 25,5...26,5  
1000H.: (23,0...29,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 475  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 475  
Del. quantity cm<sup>3</sup>/: 6,0...10,0  
1000H.: (4,0...12,0)  
2nd speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 350  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H.: 33,0

2nd speed 1/min: 450  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H.: 39,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,6...6,0  
MS mm : 1,1...1,5  
SVS max. mm : 4,6  
XK mm : 17,0...19,0  
XL mm : 14,0...17,4

Remarks:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VW 1,6 W18  
Compl. date: : 04.02.87  
Edition : 18.02.88  
replaces : 10.12.86  
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R170  
Type number : 0 460 494 152

Customer-specific information  
Customer : VW

Engine : 162T-1,6 TU

## \* TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,2  
(from BDC) : +-0,02 (0,04)

Injection-pump setting values  
test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 750  
Setting value bar: 4,8...5,4

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000H.: 42,5...43,5  
Dispersion cm<sup>3</sup>/  
1000H.: (3,0)

Full-load del. w/out charge press.:

Speed 1/min: 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 25,0...26,0

Low-idle speed regulation:

Speed 1/min: 415  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000H.: 6,0...10,0  
Dispersion cm<sup>3</sup>/  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2525  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000H.: 13,0...19,0

Start:

Speed 1/min: 100  
Charge press. hPa: 750  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 35,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 900  
Charge press. hPa: 750  
TD travel mm: 1,6...2,4  
mm: (1,2...2,8)  
2nd speed 1/min: 1500  
Charge press. hPa: 750  
TD travel mm: 3,8...4,2  
mm: (3,2...4,8)  
3rd speed 1/min: 2250  
Charge press. hPa: 750  
TD travel mm: 6,4...7,2  
mm: (6,0...7,6)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
 Charge press. hPa: 750  
 Supply-pump pressure bar: 2,7...3,3  
 bar: (2,5...3,5)  
 2nd speed 1/min: 1500  
 Charge press. hPa: 750  
 Supply-pump pressure bar: 4,8...5,4  
 bar: (4,6...5,6)  
 3rd speed 1/min: 2250  
 Charge press. hPa: 750  
 Supply-pump pressure bar: 6,7...7,3  
 bar: (6,5...7,5)

Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Charge press. hPa: 750  
 Overflow : 41...83  
 quantity cm<sup>3</sup>/10s: (26...98)  
 2nd speed 1/min: 2250  
 Charge press. hPa: 750  
 Overflow : 55...138  
 quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 900  
 Charge-air pressure-setting point hPa: 300  
 Del. quantity cm<sup>3</sup>/: 36,0...37,0  
 1000H.: (33,0...39,0)  
 2nd speed 1/min: 2525  
 Charge press. hPa: 750  
 Del. quantity cm<sup>3</sup>/: 13,0...19,0  
 1000H.: (12,0...20,0)  
 3rd speed 1/min: 2650  
 Charge press. hPa: 750  
 Del. quantity cm<sup>3</sup>/: 0,0...6,0  
 1000H.: -  
 4th speed 1/min: 2450  
 Charge press. hPa: 750  
 Del. quantity cm<sup>3</sup>/: 22,0...32,0  
 1000H.: (21,0...33,0)  
 5th speed 1/min: 2250  
 Charge press. hPa: 750  
 Del. quantity cm<sup>3</sup>/: 35,0...37,0  
 1000H.: (33,8...38,2)  
 6th speed 1/min: 1500  
 Charge press. hPa: 750  
 Del. quantity cm<sup>3</sup>/: -  
 1000H.: (40,8...45,2)  
 7th speed 1/min: 600  
 Charge press. hPa: 750  
 Del. quantity cm<sup>3</sup>/: 35,5...38,5  
 1000H.: (34,0...40,0)  
 8th speed 1/min: 600  
 Charge press. hPa: -

Del. quantity cm<sup>3</sup>/: 25,0...26,0  
 1000H.: (22,0...28,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 415  
 ELAB volt: -  
 Del. quantity cm<sup>3</sup>/: 0,0...3,0  
 max. 1000H.: -

Idle delivery:

1st speed 1/min: 415  
 Del. quantity cm<sup>3</sup>/: 6,0...10,0  
 1000H.: (4,0...12,0)  
 2nd speed 1/min: 1000  
 Del. quantity cm<sup>3</sup>/: 0,0...3,0  
 1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 400  
 Charge press. hPa: 750  
 Del. quantity cm<sup>3</sup>/: -  
 ind. 1000H: 29,5

2nd speed 1/min: 500  
 Charge press. hPa: 750  
 Del. quantity cm<sup>3</sup>/: -  
 max. 1000H : 37,5

Shutoff electromagnet:

Cut-in  
 min. voltage : 10,0  
 Rated voltage : 12,0

Mounting and assembly dimensions:

KF mm : 5,6...6,0  
 MS mm : 1,1...1,5  
 SVS max. mm : 3,0  
 XK mm : 17,0...19,0  
 XL mm : 8,4...11,8

Remarks:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W16  
Compl. date: : 12.02.88  
Edition : 12.02.88  
replaces : 12.85  
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2250 R223  
Type number : 0 460 494 182

Customer-specific information  
Customer : VW

Engine : 086T-1.6L

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Charge press. hPa: 750  
Setting value mm: 2,9...3,3

Supply-pump pressure:

Speed 1/min: 1250  
Charge press. hPa: 750  
Setting value bar: 4,2...4,8

Full-load del. with charge press.:

Speed 1/min: 1500

K17

Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000H.: 43,5...44,5  
Dispersion cm<sup>3</sup>/  
1000H : (3,0)

Full-load del. w/out charge press.:

Speed 1/min : 600  
Del. quantity cm<sup>3</sup>/  
1000H.: 23,5...24,5

Low-idle speed regulation:

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000H.: 11,0...13,0

Residual-Delivery Setting  
Speed 1/min: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2525  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/  
1000H: 13,0...19,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
Charge press. hPa: 750  
TD travel mm: 1,8...2,6  
mm: (1,5...2,9)

2nd speed 1/min: 1250  
Charge press. hPa: 750  
TD travel mm: 2,9...3,3  
mm: (2,4...3,8)

3rd speed 1/min: 1800  
Charge press. hPa: 750  
TD travel mm: 4,9...5,7  
mm: (4,6...6,0)

4th speed 1/min: 2250  
Charge press. hPa: 750

TD travel mm: 6,1...6,9  
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Charge press. hPa: 750  
Supply-pump pressure bar: 2,3...2,9  
2nd speed 1/min: 2250  
Charge press. hPa: 750  
Supply-pump pressure bar: 7,0...7,6

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
2nd speed 1/min: 2250  
Charge press. hPa: 750  
Overflow quantity cm<sup>3</sup>/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 1000  
Charge-air pressure-setting point hPa: 300  
LDA stroke mm: 6,8  
Del. quantity cm<sup>3</sup>/1000H.: 33,5...34,5  
2nd speed 1/min: 2700  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...4,0  
3rd speed 1/min: 2525  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/1000H.: 13,0...19,0  
4th speed 1/min: 2425  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/1000H.: 23,0...33,0  
5th speed 1/min: 2250  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/1000H.: 37,5...39,5  
6th speed 1/min: 1500  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/1000H.: 43,5...44,5  
7th speed 1/min: 600  
Charge press. hPa: 750  
Del. quantity cm<sup>3</sup>/1000H.: 32,0...35,0  
8th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/1000H.: 23,5...24,5

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/1000H.: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/1000H.: 11,0...13,0  
2nd speed 1/min: 425  
Del. quantity cm<sup>3</sup>/1000H.: 5,5...8,5

High Idle:

Speed 1/min: 525  
Del. quantity cm<sup>3</sup>/1000H.: 7,0...9,0

Residual:

Speed 1/min: 800  
Del. quantity cm<sup>3</sup>/1000H.: 2,5...3,5

Automatic starting fuel delivery:

1st speed 1/min: 100  
Del. quantity cm<sup>3</sup>/ind.: -  
ind. 1000H.: 35,0

2nd speed 1/min: 250  
Del. quantity cm<sup>3</sup>/max.: -  
1000H.: 40,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4  
KF mm : 5,6...6,0  
MS mm : 1,1...1,5  
SVS max. mm : 3,0  
XK mm : 17,0...19,0  
XL mm : 9,8...13,2

Remarks:

Correction at adjusting nut (46)

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W15  
Compl. date: : 27.10.87  
Edition : 23.02.88  
replaces : 08.12.86  
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2400 R224  
Type number : 0 460 494 185

Customer-specific information  
Customer : VW

Engine : 086-1,6L

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250  
Setting value bar: 4,1...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1500  
Del. quantity cm<sup>3</sup>/  
1000H.: 31,5...32,5

Dispersion cm<sup>3</sup>/: 2,5  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000H.: 11,0...13,0

Dispersion cm<sup>3</sup>/: 2,5  
1000H.: (3,0)

Residual-Delivery Setting

Speed 1/min: 550  
Del. quantity cm<sup>3</sup>/  
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2600  
Del. quantity cm<sup>3</sup>/  
1000H.: 12,0...16,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
TD travel mm: 1,0...1,8  
mm: (0,7...2,1)  
2nd speed 1/min: 1250  
TD travel mm: -  
mm: (1,6...3,0)  
3rd speed 1/min: 1800  
TD travel mm: 4,2...5,0  
mm: (3,9...5,3)  
4th speed 1/min: 2400  
TD travel mm: 6,1...6,9  
mm: (5,8...7,2)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 2,1...2,7  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 4,1...4,6  
3rd speed 1/min: 2400



Supply-pump pressure bar: 7,3...7,9

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow quantity cm<sup>3</sup>/10s: 41...83  
2nd speed 1/min: 2400  
Overflow quantity cm<sup>3</sup>/10s: 55...138

Delivery-quant. and breakaway char.:

1st speed 1/min: 2800  
Del. quantity cm<sup>3</sup>/: -  
1000H.: 0,0...4,0  
2nd speed 1/min: 2600  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (10,0...18,0)  
3rd speed 1/min: 2500  
Del. quantity cm<sup>3</sup>/: 19,0...29,0  
1000H.: (18,0...30,0)  
4th speed 1/min: 2400  
Del. quantity cm<sup>3</sup>/: 26,8...28,8  
1000H.: (25,6...30,0)  
5th speed 1/min: 1500  
Del. quantity cm<sup>3</sup>/: 31,5...32,5  
1000H.: (29,8...34,2)  
6th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 20,2...23,2  
1000H.: (18,7...24,7)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm<sup>3</sup>/: 11,0...13,0  
1000H.: (8,0...16,0)  
2nd speed 1/min: 425  
Del. quantity cm<sup>3</sup>/: 5,5...8,5  
1000H.: (3,0...11,0)

High Idle:

Speed 1/min: 525  
Del. quantity cm<sup>3</sup>/: 7,0...9,0  
1000H.: (4,0...12,0)

Residual:

K21

Speed 1/min: 500  
Del. quantity : 2,5...4,5  
1000H.: (1,0...6,0)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 35,0

2nd speed 1/min: 380  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 30,0

Shutoff electromagnet:

Cut-in min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation  
K mm : 3,2...3,4  
KF mm : 5,6...6,0  
MS mm : 1,2...1,6  
SVS max. mm : 3,2  
XK mm : 17,0...19,0  
XL mm : 9,8...13,2

Remarks: :

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : SOF 2,5 N  
Compl. date: : 30.09.85  
Edition : 20.05.88  
replaces : 19.12.86  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2100 R22-7  
Type number : 0 460 494 189

Customer-specific information  
Customer : SOFIM

Engine : 8144.67.220

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,2

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Start of delivery  
Prestroke mm : 0,3  
(from BDC) : +0,02 (0,04)

Injection-pump setting values  
test specifications in parentheses

Timing-device travel:

Speed 1/min: 1800  
Setting value mm: 7,6...8,0

Supply-pump pressure:

Speed 1/min: 1800  
Setting value bar: 6,3...6,9

Full-load del. w/out charge press.:

K22

Speed 1/min : 2000  
Del.quantity cm<sup>3</sup>/  
1000H.: 36,9...37,9  
Dispersion cm<sup>3</sup>/  
1000H.: (3,0)

Low-idle speed regulation:

Speed 1/min: 370  
Del.quantity cm<sup>3</sup>/  
1000H.: 8,0...12,0  
Dispersion cm<sup>3</sup>/  
1000H.: (3,0)

Full-load speed regulation:

Speed 1/min: 2350  
Del.quantity cm<sup>3</sup>/  
1000H.: 18,5...24,5

Start:

Speed 1/min: 100  
Del.quantity : -  
mind cm<sup>3</sup>/1000H.: 55,0

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
TD travel mm: 0,9...1,7  
mm: (0,6...2,0)  
2nd speed 1/min: 1800  
TD travel mm: -  
mm: (7,1...8,5)  
3rd speed 1/min: 2000  
TD travel mm: 8,3...9,1  
mm: (8,0...9,4)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump pressure bar: 3,2...3,8  
2nd speed 1/min: 1800  
Supply-pump pressure bar: 6,3...6,9  
3rd speed 1/min: 2000  
Supply-pump pressure bar: 6,7...7,3

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)

2nd speed 1/min: 2100  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2500  
Del. quantity cm<sup>3</sup>/: 0,0...4,5  
1000H.: -  
2nd speed 1/min: 2350  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (17,5...25,5)  
3rd speed 1/min: 2100  
Del. quantity cm<sup>3</sup>/: 36,1...38,7  
1000H.: (35,1...39,7)  
4th speed 1/min: 2000  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (35,1...39,7)  
5th speed 1/min: 1100  
Del. quantity cm<sup>3</sup>/: 42,5...45,5  
1000H.: (41,7...46,3)  
6th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 34,3...37,3  
1000H.: (32,8...38,8)

Zero delivery (stop):

Mech. shutoff:

Speed 1/min: 2100  
Del. quantity cm<sup>3</sup>/: 0..3  
1000H.: -

Idle delivery:

1st speed 1/min: 370  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (6,0...14,0)  
2nd speed 1/min: 420  
Del. quantity cm<sup>3</sup>/: -  
1000H.: 0,0...1,5  
3rd speed 1/min: 500  
Del. quantity cm<sup>3</sup>/: -  
1000H.: 0,0...3,0

Automatic starting fuel delivery:

1st speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H: 37,0  
2nd speed 1/min: 480  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H : 38,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

K23

Mounting and assembly dimensions:

Designation

K mm : -  
KF mm : 5,4...5,7  
MS mm : 1,7...1,9

Remarks: :

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VWV 1,6 W19  
Compl. date: : 28.10.87  
Edition : 22.02.88  
replaces : 02.04.87  
Calibrating oil : ISO 4113  
  
Injection pump : VE 4/ 9F2400 R221-2  
Type number : 0 460 494 207

Customer-specific information  
Customer : VW

Engine : 086-1,6L

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1250  
Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250  
Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1000  
Del. quantity cm<sup>3</sup>/  
1000H.: 28,5...29,5

Dispersion cm<sup>3</sup>/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 375  
Del. quantity cm<sup>3</sup>/  
1000H.: 11,0...13,0  
Residual-Delivery Setting  
Speed 1/min: 550  
Del. quantity cm<sup>3</sup>/  
1000H.: 2,5...3,5

Full-load speed regulation:

Speed 1/min: 2600  
Del. quantity cm<sup>3</sup>/  
1000H.: 12,0...16,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 35,0

Load-dependent start of delivery:

Speed 1/min: 1250

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 1000  
TD travel mm: 1,0...1,8  
mm: (0,8...2,0)  
2nd speed 1/min: 1250  
TD travel mm: 2,1...2,5  
mm: (1,8...2,8)  
3rd speed 1/min: 1800  
TD travel mm: 4,2...5,0  
mm: (4,0...5,2)  
4th speed 1/min: 2400  
TD travel mm: 6,1...6,9  
mm: (5,9...7,1)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 2,1...2,7  
bar: -  
2nd speed 1/min: 1250  
Supply-pump  
pressure bar: 4,0...4,6  
bar: -  
3rd speed 1/min: 2400

Supply-pump  
pressure bar: 7,3...7,9  
bar: -

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm3/10s: (26...98)  
2nd speed 1/min: 2400  
Overflow : 55...138  
quantity cm3/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2600  
Del. quantity cm3/: 12,0...16,0  
1000H.: (10,0...18,0)  
2nd speed 1/min: 2800  
Del. quantity cm3/: 0,0...6,0  
1000H.: -  
3rd speed 1/min: 2500  
Del. quantity cm3/: 19,0...29,0  
1000H.: (18,0...30,0)  
4th speed 1/min: 2400  
Del. quantity cm3/: 27,5...29,5  
1000H.: (27,0...30,0)  
5th speed 1/min: 1000  
Del. quantity cm3/: -  
1000H.: (27,7...30,3)  
6th speed 1/min: 600  
Del. quantity cm3/: 22,5...25,5  
1000H.: (22,2...25,8)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 425  
ELAB volt: -  
Del. quantity cm3/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 375  
Del. quantity cm3/: 11,0...13,0  
1000H.: (8,0...16,0)  
2nd speed 1/min: 425  
Del. quantity cm3/: 5,5...8,5  
1000H.: (3,0...11,0)

High Idle:

Speed 1/min: 525  
Del. quantity cm3/: 7,0...9,0  
1000H.: (4,0...12,0)

Residual:

K25

Speed 1/min: 500  
Del. quantity : 2,5...4,5  
1000H.: (1,0...6,0)

Automatic starting fuel delivery:

1st speed 1/min: 180  
Del. quantity cm3/: -  
ind. 1000H.: 35,0

2nd speed 1/min: 380  
Del. quantity cm3/: -  
max. 1000H.: 30,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,2...1,6
SVS max.	mm	: 3,4
XK	mm	: 17,0...19,0
XL	mm	: 11,9...15,3

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : OPE 2,3 M2  
Compl. date: : 20.11.87  
Edition : 16.02.88  
replaces : -  
Calibrating oil : ISO 4113

Injection pump : VE 4/ 9F2200 L243-4  
Type number : 0 460 494 219

Customer-specific information  
Customer : OPE

Engine : 2,3 D+ , 88

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50

Inlet press., bar : 0,35

Calibrating nozzle-holder  
assembly : 1 688 901 000

Opening  
pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 840

Injection-pump setting values  
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1200  
Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1200  
Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

Speed 1/min : 1200  
Del. quantity cm<sup>3</sup>/  
1000H.: 43,0...44,0

Dispersion cm<sup>3</sup>/: 2,5  
1000H.: -

Low-idle speed regulation:

Speed 1/min: 270  
Del. quantity cm<sup>3</sup>/  
1000H.: 10,0...14,0  
Dispersion cm<sup>3</sup>/: 2,5  
1000H.: -

Full-load speed regulation:

Speed 1/min: 2450  
Del. quantity cm<sup>3</sup>/  
1000H.: 21,0...27,0

Start:

Speed 1/min: 100  
Del. quantity : -  
mind cm<sup>3</sup>/1000H.: 52,0

Load-dependent start of delivery:

Speed 1/min: 1200

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 600  
TD travel mm: 0,6...1,4  
2nd speed 1/min: 800  
TD travel mm: 1,9...2,7  
mm: (1,6...3,0)  
3rd speed 1/min: 1200  
TD travel mm: 4,3...4,7  
mm: (3,8...5,2)  
4th speed 1/min: 2200  
TD travel mm: 9,7...10,5  
mm: (9,4...10,8)

Supply-pump pressure characteristic:

1st speed 1/min: 600  
Supply-pump  
pressure bar: 2,4...3,0  
bar: -  
2nd speed 1/min: 800  
Supply-pump  
pressure bar: 3,0...3,6  
3rd speed 1/min: 1200  
Supply-pump  
pressure bar: 4,0...4,6  
bar: -  
4th speed 1/min: 2200

Supply-pump  
pressure

bar: 6,5...7,1

Overflow quantity at overflow valve:

1st speed 1/min: 600  
Overflow : 41...83  
quantity cm<sup>3</sup>/10s: (26...98)  
2nd speed 1/min: 2200  
Overflow : 55...138  
quantity cm<sup>3</sup>/10s: (40...153)

Delivery-quant. and breakaway char.:

1st speed 1/min: 2450  
Del. quantity cm<sup>3</sup>/: 21,0...27,0  
1000H.: (20,0...28,0)  
2nd speed 1/min: 2700  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
1000H.: -  
3rd speed 1/min: 2600  
Del. quantity cm<sup>3</sup>/: 4,0...12,0  
1000H.: (3,0...13,0)  
4th speed 1/min: 2200  
Del. quantity cm<sup>3</sup>/: 34,8...37,8  
1000H.: (34,0...38,6)  
5th speed 1/min: 1200  
Del. quantity cm<sup>3</sup>/: 43,0...44,0  
1000H.: (41,2...45,8)  
6th speed 1/min: 600  
Del. quantity cm<sup>3</sup>/: 33,5...36,5  
1000H.: (32,0...38,0)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 270  
ELAB volt: -  
Del. quantity cm<sup>3</sup>/: 0,0...3,0  
max. 1000H.: -

Idle delivery:

1st speed 1/min: 270  
Del. quantity cm<sup>3</sup>/: -  
1000H.: (8,0...16,0)  
2nd speed 1/min: 320  
Del. quantity cm<sup>3</sup>/: 3,0...9,0  
1000H.: (2,5...9,5)  
3rd speed 1/min: 400  
Del. quantity cm<sup>3</sup>/: 0,0...2,6  
1000H.: -

Automatic starting fuel delivery:

1st speed 1/min: 130  
Del. quantity cm<sup>3</sup>/: -  
ind. 1000H.: 52,0

2nd speed 1/min: 230  
Del. quantity cm<sup>3</sup>/: -  
max. 1000H.: 35,0

Shutoff electromagnet:

Cut-in  
min. voltage : 10,0  
Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K	mm	: 3,2...3,4
KF	mm	: 5,6...6,0
MS	mm	: 1,7...2,1
SVS max.	mm	: 2,2
XK	mm	: 17,0...19,0
XL	mm	: 9,7...13,1

Remarks:

:

# BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 1,9 H  
Compl. date: : 06.11.87  
Edition : 16.11.87  
replaces : -  
Calibrating oil : ISO-4113  
  
Injection pump : VE 4/ 9F2100 L184-1  
Type number : 0 460 494 236  
  
Customer-specific information  
Customer : FIAT  
  
Engine : M707 CT 19.0

## TEST BENCH REQUIREMENTS

Calibrating-oil  
return temp. °C  
with thermometer : 40...48  
electronically : 42...50  
  
Inlet press., bar : 0.35  
  
Calibrating nozzle-holder  
assembly : 1 688 901 022  
  
Opening  
pressure bar : 130...133  
  
Test inj. tubing : 1 680 750 073  
  
Outside diameter : 6  
x Wall thickness : 2  
x Length mm : 450  
  
Start of delivery  
Prestroke mm : -  
(from BDC): -

Injection-pump setting values  
test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500  
Charge press. hPa: 800  
Setting value mm: 5,4...5,8

Supply-pump pressure:

Speed 1/min: 1500  
Charge press. hPa: 800  
Setting value bar: 6,1...6,7

Full-load del. with charge press.:

Speed 1/min: 1500  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 46,3...47,3  
Dispersion cm<sup>3</sup>/  
1000H.: 2,5

Full-load del. w/out charge press.:

Speed 1/min: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 35,6...36,6

Low-idle speed regulation:

Speed 1/min: 350  
Charge press. hPa: -  
Del. quantity cm<sup>3</sup>/  
1000H.: 8,0...12,0  
Dispersion cm<sup>3</sup>/  
1000H.: 2,5

Full-load speed regulation:

Speed 1/min: 2400  
Charge press. hPa: 800  
Del. quantity cm<sup>3</sup>/  
1000H.: 15,0...21,0

Start:

Speed 1/min: 100  
Del. quantity : 57,0

Load-dependent start of delivery:

Speed 1/min: 1500

Inspection-pump test specifications  
Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 800  
Charge press. hPa: 800  
TD travel mm: 1,7...2,5  
mm: (1,4...2,8)  
2nd speed 1/min: 1500  
Charge press. hPa: 800  
TD travel mm: 5,4...5,8  
mm: (4,9...6,3)  
3rd speed 1/min: 2000  
Charge press. hPa: 800  
TD travel mm: 7,6...8,4  
mm: (7,3...8,7)



Supply-pump pressure characteristic:

1st speed 1/min: 400  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 2,8...3,4  
 2nd speed 1/min: 800  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 4,1...4,7  
 3rd speed 1/min: 1500  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 6,1...6,7  
 4th speed 1/min: 2000  
 Charge press. hPa: 800  
 Supply-pump pressure bar: 7,5...8,1

Overflow quantity at overflow valve:

1st speed 1/min: 600  
 Charge press. hPa: -  
 Overflow quantity cm<sup>3</sup>/10s: (41...83)  
 2nd speed 1/min: 2100  
 Charge press. hPa: 800  
 Overflow quantity cm<sup>3</sup>/10s: (55...138)

Delivery-quant. and breakaway char.:

1st speed 1/min: 800  
 Charge-air pressure-setting point hPa: 450  
 LDA stroke mm: 4,5  
 Del. quantity cm<sup>3</sup>/1000H.: (45,0...46,0)  
 2nd speed 1/min: 2550  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (0,0...5,0)  
 3rd speed 1/min: 2400  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (15,0...21,0)  
 4th speed 1/min: 2300  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (29,0...36,0)  
 5th speed 1/min: 2100  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (46,5...49,5)  
 6th speed 1/min: 1500  
 Charge press. hPa: 800  
 Del. quantity cm<sup>3</sup>/1000H.: (46,3...47,3)  
 7th speed 1/min: 800  
 Charge press. hPa: -

Del. quantity cm<sup>3</sup>/1000H.: (35,6...36,6)  
 8th speed 1/min: 600  
 Charge press. hPa: -  
 Del. quantity cm<sup>3</sup>/1000H.: (37,3...39,3)

Zero delivery (stop):

Electr. shutoff:

Speed 1/min: 350  
 ELAB volt: -  
 Del. quantity cm<sup>3</sup>/max. 1000H.: (0,0...3,0)

Idle delivery:

1st speed 1/min: 350  
 Del. quantity cm<sup>3</sup>/1000H.: (8,0...12,0)  
 2nd speed 1/min: 400  
 Del. quantity cm<sup>3</sup>/1000H.: (2,0...8,0)  
 3rd speed 1/min: 500  
 Del. quantity cm<sup>3</sup>/1000H.: (0,0...1,6)

Automatic starting fuel delivery:

1st speed 1/min: 300  
 Del. quantity cm<sup>3</sup>/ind. 1000H.: (55,0)  
 2nd speed 1/min: 500  
 Del. quantity cm<sup>3</sup>/max. 1000H.: (45,0)

Shutoff electromagnet:

Cut-in min. voltage : 10,0  
 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4  
 KF mm : 5,6...6,0  
 MS mm : 1,3...1,7  
 SVS max. mm : 5,4  
 XK mm : 20,0...22,0  
 XL mm : 12,3...15,7

Remarks:

Correction at adjusting nut (46)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 g 28  
Edition : 27.06.88  
Replaces : 26.06.87  
Test oil : ISO-4113

Combination no. : 0 400 464 133

Injection pump  
Pump designation : PES4A80D410/3RS1349  
EP type number : 0 410 484 021  
Governor  
Governor design. : RSV325...1175ABC2163  
-4L  
Governor no. : 0 420 232 476

Customer-spec. information  
Customer : KHD

Engine : F4L912

1st version kW : 51.0  
Rated speed : 2350

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00X2.00X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00  
: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Phasing : 0-90-180-270  
Tolerance + - ° : 0.50(0.75)

## BASIC SETTING

1st speed rpm : 1175

Rack travel in mm : 10.10...10.20

Del. quantity cm<sup>3</sup>/ : 5.7...5.8

100 s: (5.6...6.0)

Spread cm<sup>3</sup> : 0.25

100 s: (0.40)

2nd speed rpm : 325  
Rack travel in mm : 5.90...6.10  
Del. quantity cm<sup>3</sup>/ : 1.0...1.6  
100 s: (0.8...1.7)

Spread cm<sup>3</sup> : 0.20  
100 s: (0.30)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 4.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1175  
Del. quantity : 57.5...58.5  
1000 : (56.0...60.0)

Spread cm<sup>3</sup> : 2.5  
1000 : (4.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 49...57

Testing:  
1st rack travel in: 9.10  
Speed rpm : 1215...1225  
2nd rack travel in: 4.00  
Speed rpm : 1240...1270  
3rd rack travel in: 4.00  
Speed rpm : 1255...1285  
4th rack travel in: 1415

Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever

position degrees: 13...17

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 5.50

#### Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 325

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00

Speed rpm : 460...520

#### TORQUE CONTROL

Dimension a mm : 0.85

Torque control curve - 1st version

1st speed rpm : 1175

Rack travel in m: 10.10...10.20

2nd speed rpm : 500

Rack travel in m: 11.00...11.10

3rd speed rpm : 990

Rack travel in m: 10.50...10.70

#### FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 55.0...57.0

1000 s: (53.0...59.0)

#### BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1215...1225

#### STARTING FUEL DELIVERY

speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 135.0...145.0

1000 s: (132.0...148.0)

Rack travel in mm : 19.50...21.00

Remarks:

; TKS2,70

#### APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 8.3 n 5  
Edition : 27.06.88  
Replaces : 12.09.86  
Test oil : ISO-4113

Combination no. : 0 400 676 175

Injection pump  
Pump designation : PE6A95D41ORS2575  
EP type number : 0 410 696 984  
Governor  
Governor design. : RSV250...1200ASC2198  
-1L  
Governor no. : 0 420 232 442

Customer-spec. information  
Customer : DAF

Engine : DH825

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)  
Rack travel in mm : 7.50...10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 3.00...4.00

## BASIC SETTING

1st speed rpm : 1200  
-----  
Rack travel in mm : 10.40...10.50  
-----  
Del. quantity cm<sup>3</sup>/ : 7.3...7.5  
100 s : (7.1...7.7)  
-----  
Spread cm<sup>3</sup> : 0.35  
-----  
100 s : (0.60)  
-----

2nd speed rpm : 250  
Rack travel in mm : 6.10...6.30  
Del. quantity cm<sup>3</sup>/ : 0.7...1.1  
100 s : (0.4...1.3)  
Spread cm<sup>3</sup> : 0.35  
100 s : 0.55

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 5.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Del. quantity : 73.0...75.0  
1000 : (71.0...77.0)  
Spread cm<sup>3</sup> : 3.5  
1000 : (6.0)

## RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 9.40

Speed rpm : 1240...1250  
2nd rack travel in: 4.00  
Speed rpm : 1300...1330  
3rd rack travel in: 4.00  
Speed rpm : 1340...1370  
4th rack travel in: 1505  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 24...32  
Setting point w/out bumper spring  
Speed rpm : 250  
Rack travel in mm : 5.70  
Speed rpm : 250  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 655...715

#### TORQUE CONTROL

Dimension a mm : 0.80  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 10.40...10.50  
2nd speed rpm : 500  
Rack travel in m: 11.20...11.30  
3rd speed rpm : 800  
Rack travel in m: 11.10...11.20  
4th speed rpm : 940  
Rack travel in m: 10.70...11.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 74.5...77.5  
1000 s: (72.0...80.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 9.40  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 125.0...140.0  
1000 s: (122.0...143.0)  
Rack travel in mm : 19.50...21.00

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : KHD 1 g 4  
Edition : 27.06.88  
Replaces : 30.03.87  
Test oil : ISO-4113

Combination no. : 0 400 866 111

Injection pump  
Pump designation : PES6A85D410/3RS2611  
EP type number : 0 410 886 902  
Governor  
Governor design. : RSV325...1200AOC2148  
L  
Governor no. : 0 420 232 293

Customer-spec. information  
Customer : KHD

Engine : F6L913

1st version kW : 84.0  
Rated speed : 2400

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.50...2.60  
: (2.45...2.65)

L07

Rack travel in mm : 9.0...12.0  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 11.3...11.4

Del. quantity cm<sup>3</sup>/ : 6.9...7.0

100 s : (6.7...7.2)

Spread cm<sup>3</sup> : 0.3

100 s : (0.45)

2nd speed rpm : 325

Rack travel in mm : 8.4...8.6

Del. quantity cm<sup>3</sup>/ : 0.8...1.4

100 s : (0.6...1.6)

Spread cm<sup>3</sup> : 0.2

100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del. quantity : 69.5...70.5

1000 : (67.5...72.5)

Spread cm<sup>3</sup> : 3.0

1000 : (4.5)

## RATED SPEED

1st version

Control lever

position degrees: 53...61

Testing:

1st rack travel in: 10.30

Speed rpm : 1240...1250

2nd rack travel in: 4.00

Speed rpm : 1315...1345

4th rack travel in: 1425

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 28...36

Setting point w/out bumper spring

Speed rpm : 325

Rack travel in mm : 8.50

Speed rpm : 325

Rack travel in mm : 8.40...8.60

Rack travel in mm : 2.00

Speed rpm : 450...510

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 11.30...11.40

2nd speed rpm : 500

Rack travel in m: 11.80...11.90

3rd speed rpm : 975

Rack travel in m: 11.60...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800

Del. quantity cm<sup>3</sup>/ : 63.5...65.5

1000 s: (61.0...68.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100

Del. quantity cm<sup>3</sup>/ : 120.0...130.0

1000 s: (117.0...133.0)

rack travel in mm : 16.90...17.30

Remarks:

: DX

APPLICATION

Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MWM 6.2 e 3  
Edition : 01.07.88  
Replaces : 12.09.86  
Test oil : ISO-4113

Combination no. : 0 400 866 114

Injection pump  
Pump designation : PES6A90D320/3RS2660  
EP type number : 0 410 896 078  
Governor  
Governor design. : RSV325...1200AOC2182  
-1R  
Governor no. : 0 420 233 192

Customer-spec. information  
Customer : MWM

Engine : TD226B-6

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.95...3.05  
(2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

L09

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 3.50...4.50

## BASIC SETTING

1st speed rpm : 1200  
-----  
Rack travel in mm : 12.00...12.10  
-----  
Del. quantity cm<sup>3</sup>/ : 9.7...9.8  
-----  
100 s : (9.5...10.0)  
-----  
Spread cm<sup>3</sup> : 0.30  
-----  
100 s : (0.45)  
-----  
2nd speed rpm : 325  
Rack travel in mm : 6.9...7.1  
Del. quantity cm<sup>3</sup>/ : 0.8...1.4  
100 s : (0.6...1.6)  
-----  
Spread cm<sup>3</sup> : 0.25  
100 s : 0.40

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.25

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1200  
Aneroid pressure h: 700  
Del. quantity : 97.5...98.5  
1000 : (95.5...100.5)  
-----  
Spread cm<sup>3</sup> : 3.0  
1000 : 4.5

## RATED SPEED

1st version  
Control lever  
position degrees: 41...49

Testing:  
1st rack travel in: 11.00  
Speed rpm : 1240...1250



2nd rack travel in: 4.00  
Speed rpm : 1275...1305  
3rd rack travel in: 4.00  
Speed rpm : 1300...1330  
4th rack travel in: 1465  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 14...22  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.50

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 325  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 495...555

TORQUE CONTROL  
Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1200  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 500  
Rack travel in m: 12.30...12.40  
3rd speed rpm : 1115  
Rack travel in m: 12.10...12.30

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.30...12.40

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.10...10.20  
2nd pressure hPa : 275  
Rack travel in m: 11.70...11.80  
3rd pressure hPa : 80  
Rack travel in m: 10.60...10.80

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 275  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 83.0...85.0  
1000 s: (80.5...87.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack travel: 11.00  
Speed rpm : 1240...1250

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...145.0  
1000 s: (132.0...148.0)  
Rack travel in mm : 19.50...21.00

Remarks:

APPLICATION  
Tractor (tractor engines)

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 5,7 g 18  
Edition : 30.05.88  
Replaces : 25.3.88  
Test oil : ISO-4113

Combination no. : 0 400 876 218

Injection pump  
Pump designation : PES6A90D41ORS2293  
EP type number : 0 410 896 031  
Governor  
Governor design. : RSV350...1400AOC1080  
L  
Governor no. : 0 420 232 408

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM 352

1st version kW : 92.0  
Rated speed : 2800

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.00

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.15...2.25  
: (2.10...2.30)

Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 1400  
-----  
Rack travel in mm : 9.70...9.80  
-----  
Del. quantity cm<sup>3</sup>/ : 6.3...6.4  
-----  
100 s : (6.1...6.6)  
-----  
Spread cm<sup>3</sup> : 0.3  
-----  
100 s : (0.4)  
-----

2nd speed rpm : 350.0  
Rack travel in mm : 6.6...7.2  
Del. quantity cm<sup>3</sup>/ : 1.0...1.2  
100 s : (0.8...1.4)  
Spread cm<sup>3</sup> : 0.2  
100 s : (0.4)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : 3.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1400  
Del. quantity : 63.0...64.0  
1000 : (61.0...66.0)  
Spread cm<sup>3</sup> : 3.00  
1000 : (4.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 68...76

Testing:  
1st rack travel in: 8.70  
Speed rpm : 1440...1445  
2nd rack travel in: 4.00  
Speed rpm : 1473...1486  
3rd rack travel in: 4.00

Speed rpm : 1510...1540  
4th rack travel in: 1570  
Speed rpm : 0.30...1.40  
5th rack travel in: 1445...1455  
Speed rpm : 8.70

#### LOW IDLE 1

Control lever  
position degrees: -3  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 6.80

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.70...6.90  
Rack travel in mm : 2.00  
Speed rpm : 450...510

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1400  
Rack travel in m: 9.70...9.80  
2nd speed rpm : 600  
Rack travel in m: 9.90...10.10

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 600  
Del.quantity cm<sup>3</sup>/ : 51.0...53.0  
1000 s: (49.0...55.0)  
Speed rpm : 850  
Del.quantity cm<sup>3</sup>/ : 56.0...58.0  
1000 s: (53.5...60.5)

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 78.0...88.0  
1000 s: (75.0...91.0)  
Rack travel in mm : 15.00...15.40

#### LOW IDLE

Speed rpm : 350  
Rack travel in mm : 6.60...7.20  
Del.quantity cm<sup>3</sup>/ : 10.0...12.0  
1000 s: (8.0...14.0)  
Spread cm<sup>3</sup> : 2.50  
1000 s: (4.50)

Remarks:

;

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DAF 6.2 o 1  
Edition : 28.06.88  
Replaces : 12.10.86  
Test oil : ISO-4113  
  
Combination no. : 0 400 876 333  
  
Injection pump  
Pump designation : PES6A95D32ORS2693Z  
EP type number : 0 410 896 913  
Governor  
Governor design. : RSV300...1300AOC2195  
R  
Governor no. : 0 420 233 200

Customer-spec. information  
Customer : DAF

Engine : DNS 620

1st version kW : 150.0  
Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 2.00...2.10  
: (1.95...2.15)

Rack travel in mm : 7.50...10.50  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50  
& maximum rack tra: 21.00  
Difference ° CS : 2.50...3.50

## BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 8.7...8.9

100 s: (8.5...9.1)

Spread cm<sup>3</sup> : 0.35

100 s: (0.60)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

Del. quantity : 87.0...89.0

1000 : (85.0...91.0)

Spread cm<sup>3</sup> : 3.5

1000 : (6.0)

## RATED SPEED

1st version

Control lever

position degrees: 54-62

Testing:

1st rack travel in: 10.70

Speed rpm : 1340...1350

2nd rack travel in: 4.00

Speed rpm : 1410...1440

3rd rack travel in: 4.00  
Speed rpm : 1430...1460  
4th rack travel in: 1595  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 23...31  
Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.90

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 570...630

#### TORQUE CONTROL

Dimension a mm : 0.60  
Torque control curve - 1st version  
1st speed rpm : 1290  
Rack travel in m: 11.70...11.90  
2nd speed rpm : 500  
Rack travel in m: 12.20...12.30  
3rd speed rpm : 1020  
Rack travel in m: 11.90...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 700  
Rack travel mm : 12.20...12.30

#### Measurement

Speed 1/min : 600

1st pressure hPa : -  
Rack travel in m: 11.20...11.40  
2nd pressure hPa : 290  
Rack travel in m: 12.00...12.10  
3rd pressure hPa : 250  
Rack travel in m: 11.50...11.70

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 1290  
Del.quantity cm<sup>3</sup>/ : 86.0...88.0  
1000 s: (83.5...90.5)  
Aneroid pressure h: -  
Speed rpm : 600

Del.quantity cm<sup>3</sup>/ : 65.0...67.0  
1000 s: (63.0...69.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1340...1350

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 130.0...145.0  
1000 s: (127.0...148.0)  
Rack travel in mm : 19.50...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del.quantity cm<sup>3</sup>/ : 7.0...11.0  
1000 s: (4.5...13.5)  
Spread cm<sup>3</sup> : 3.5  
1000 s: (5.5)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 c  
 Edition : 20.6.88  
 Replaces : 10.85  
 Test oil : ISO-4113  
 Combination no. : 0 401 849 705  
 Injection pump  
 Pump designation : PE10P110A320LS3818  
 Governor  
 Governor design. : RQ300/1150PA437-2

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 423

1st version kW : 261.0  
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3.10...3.20  
 : (3.05...3.25)

Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 7- 6- 3- 5-  
 : 2- 10- 9- 4

Phasing : 0-27-72-99-144-171-2  
 : 16-243-288-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 12.6...12.8

100 s : (12.3...13.0)

Spread cm<sup>3</sup> : 0.4

100 s : (0.8)

2nd speed rpm : 300

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.2...2.0

100 s : (0.9...2.3)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 13.00...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Del. quantity : 126.0...128.0

1000 : (123.5...130.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 13.5

Testing:

1st rack travel in: 10.20

Speed rpm : 1190...12.05

2nd rack travel in: 4.00

Speed rpm : 1225...1255

4th rack travel in: 1350

Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300

Rack travel in mm : 8.0

Testing:

Speed rpm : 100

Minimum rack trave: 9.50

Speed rpm : 300

Rack travel in mm : 7.90...8.10

Rack travel in mm : 2.00

Speed rpm : 430...470

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1150

Rack travel in m: 11.20...11.30

2nd speed rpm : 600

Rack travel in m: 11.70...11.90

3rd speed rpm : 900

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600

Del.quantity cm3/ : 109.0...113.0

1000 s: (106.0...116.0)

Speed rpm : 900

Del.quantity cm3/ : 118.0...123.0

1000 s: (115.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

Speed rpm : 1190...1205

STARTING FUEL DELIVERY

speed rpm : 100

Del.quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

Remarks:

:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : PEN 7.0 b 2  
Edition : 28.06.88  
Replaces : 05.84  
Test oil : ISO-4113  
Combination no. : 0 401 876 272  
Injection pump  
Pump designation : PE6P110A32ORS260W  
EP type number : 0 411 816 154  
Governor  
Governor design. : RSV250...1250P0/374-  
2R  
Governor no. : 0 421 833 068

Customer-spec. information  
Customer : VOLVO-PENTA

Engine : TAMD70E

1st version kW : 228.0  
Rated speed : 2500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6,00X1,50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2,80...2,90  
: (2,75...2,95)

Rack travel in mm : 9.00...12.00  
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1000  
-----  
Rack travel in mm : 12.10...12.20  
-----  
Del. quantity cm<sup>3</sup>/ : 14.1...14.3  
-----  
100 s: (13.8...14.6)  
-----  
Spread cm<sup>3</sup> : 0.40  
-----  
100 s: (0.75)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...1.00

Governor spring pre-tension  
Click setting x : 2.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1000  
Aneroid pressure h: 900  
Del. quantity : 141.0...143.0  
1000 : (138.0...146.0)  
Spread cm<sup>3</sup> : 4.0  
1000 : (7.5)

## RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 11.10  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1390...1420  
4th rack travel in: 1510  
Speed rpm : 0.30...1.70

## LOW IDLE 1

Control lever  
position degrees: 22...30



Setting point w/out bumper spring

Speed rpm : 250  
Rack travel in mm : 5.70  
Speed rpm : 250  
Rack travel in mm : 6.10...6.30  
Rack travel in mm : 2.00  
Speed rpm : 480...540

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.10...12.20

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.00...9.40  
2nd pressure hPa : 590  
Rack travel in m: 11.30...11.40  
3rd pressure hPa : 300  
Rack travel in m: 9.70...9.90

#### FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 85.0...88.0  
1000 s: (82.0...91.0)

#### BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.10  
Speed rpm : 1290...1300

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...210.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 250  
Rack travel in mm : 6.10...6.30  
Del. quantity cm<sup>3</sup>/ : 11.0...15.0  
Spread cm<sup>3</sup> : 3.0  
1000 s: (6.0)

Remarks:

APPLICATION

Navy

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : PEN 7.1 b  
 Edition : 27.06.88  
 Replaces : 10.85  
 Test oil : ISO-4113

Combination no. : 0 401 876 315

Injection pump  
 Pump designation : PE6P110A32ORS492  
 EP type number : 0 411 816 161  
 Governor  
 Governor design. : RSV650...750P4/421  
 Governor no. : 0 421 833 120

Customer-spec. information  
 Customer : VOLVO-PENTA

Engine : TJD71G

1st version kW : 127.0  
 Rated speed : 1500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 0 681 343 009

Opening  
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 3.00...3.10  
 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

L19

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del. quantity cm<sup>3</sup>/ : 13.4...13.6

100 s : 13.1...13.9

Spread cm<sup>3</sup> : 0.40

100 s : (0.75)

2nd speed rpm : 650

Rack travel in mm : 4.40...4.60

Del. quantity cm<sup>3</sup>/ : 1.6...2.0

100 s : (1.3...2.2)

Spread cm<sup>3</sup> : 0.30

100 s : (0.60)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 2.75

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Del. quantity : 134.0...136.0

1000 : (131.0...139.0)

Spread cm<sup>3</sup> : 4.0

1000 : (7.5)

**RATED SPEED**

1st version

Control lever

position degrees: 35...43

Testing:

1st rack travel in: 11.6

Speed rpm : 750...755

2nd rack travel in: 4.0

Speed rpm : 775...785

4th rack travel in: 930

Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever

position degrees: 29...37

Setting point w/out bumper spring

Speed rpm : 650

Rack travel in mm : 6.10

Speed rpm : 650

Rack travel in mm : 6.00...6.20

Rack travel in mm : 2.00

Speed rpm : 660...700

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 750...755

LOW IDLE

Speed rpm : 650

Rack travel in mm : 6.00...6.20

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

mm

APPLICATION

Generator set

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : RVI 14,9 f  
 Edition : 09.03.87  
 Replaces : 25.9.86  
 Test oil : ISO-4113

Combination no. : 0 402 048 044

Injection pump  
 Pump designation : PES8P120A32ORS507  
 EP type number : 0 412 028 023  
 Governor  
 Governor design. : RQV275...1050PA665-1  
 Governor no. : 0 421 813 468

Customer-spec. information  
 Customer : RVI

Engine : MIVR083530C

1st version kW : 280.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 4- 2- 7- 3-  
 6- 5

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1050

Rack travel in mm : 11.00...11.10

Del.quantity cm<sup>3</sup>/ : 18.2...18.4

100 s: (17.9...18.7)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.2...6.4

Del.quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 275  
 travel mm : 1.40...1.60

2nd speed rpm : 450  
 travel mm : 3.40...3.80

3rd speed rpm : 800  
 travel mm : 5.80...6.00

4th speed rpm : 1050  
 travel mm : 7.60...7.80

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del.quantity : 182.0...184.0

1000 : (179.0...187.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 10.00  
Speed rpm : 1105...1115  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 200  
Minimum rack travel: 6.40  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 280...405

Aneroid/Altitude  
Compensator Test

#### 1st version

#### Setting

Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.00...11.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.40...9.50  
2nd pressure hPa : 150  
Rack travel in m: 10.60...10.80  
3rd pressure hPa : 110  
Rack travel in m: 9.60...9.90

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 650

L22

Del. quantity cm<sup>3</sup>/ : 165.0...171.0  
1000 s: (162.0...174.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 116.0...118.0  
1000 s: (113.0...121.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.00  
Speed rpm : 1105...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80

#### Remarks:

:  
Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : RVI 14,9 f2  
 Edition : 27.03.87  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 048 045  
 Injection pump  
 Pump designation : PES8P120A32ORS507  
 EP type number : 0 412 028 023  
 Governor  
 Governor design. : RQV275...1050PA665  
 Governor no. : 0 421 813 370

Customer-spec. information  
 Customer : RVI

Engine : MIVS083530

1st version kW : 268.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**  
 Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 4- 2- 7- 3-  
 6- 5

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1050

Rack travel in mm : 11.2...11.3

Del. quantity cm<sup>3</sup>/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 6.4...6.6

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 275  
 travel mm : 1.30...1.70

2nd speed rpm : 400  
 travel mm : 3.00...3.50

3rd speed rpm : 525  
 travel mm : 4.00...4.40

4th speed rpm : 650  
 travel mm : 4.90...5.30

5th speed rpm : 1050  
 travel mm : 7.60...7.80

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 187.0...189.0  
1000 : (184.0...192.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 10.20  
Speed rpm : 1105...1115  
2nd rack travel in: 4.00  
Speed rpm : 1195...1225  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 7...15

#### Testing:

Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80

#### CONSTANT REGULATION

Speed rpm : 290...405

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 11.20...11.30

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.30...9.40  
2nd pressure hPa : 280  
Rack travel in m: 10.80...10.90  
3rd pressure hPa : 220  
Rack travel in m: 9.50...9.70

#### START CUT-OUT

Speed 1/min : 195 (215)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

L24

Aneroid pressure h: 700  
Speed rpm : 650  
Del. quantity cm<sup>3</sup>/ : 170.0...176.0  
1000 s: (167.0...179.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 114.0...116.0  
1000 s: (111.0...119.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 10.20  
Speed rpm : 1105...1115

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 140.0...160.0  
1000 s: (136.0...164.0)

#### LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### Remarks:

:  
Start-of-delivery mark 13° cam angle  
after start of delivery cyl. 1.

**BOSCH INJ. PUMP TEST SPECIFICATIONS****Note remarks**

Test sheet : RVI 14,9 e  
 Edition : 13.05.87  
 Replaces : 5.85  
 Test oil : ISO-4113

Combination no. : 0 402 048 701

Injection pump  
 Pump designation : PES8P120A32ORS3124  
 EP type number : 0 412 028 701  
 Governor  
 Governor design. : RQ750PA596  
 Governor no. : 0 421 801 149

Customer-spec. information  
 Customer : RVI

Engine : MIVS (R) 083530

1st version kW : 320.0  
 Rated speed : 1500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 8- 4- 2- 7- 3-  
 6- 5

Phasing : 0-45-90-135-180-225-  
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 11.40...11.50

Del. quantity cm<sup>3</sup>/ : 26.7...26.9

100 s : (26.4...27.2)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.2...4.4

Del. quantity cm<sup>3</sup>/ : 1.5...2.1

100 s : (1.2...2.4)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 700

Del. quantity : 267.0...269.0

1000 : (264.0...272.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

**RATED SPEED**

1st version

Testing:

1st rack travel in: 10.40

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 775...785

4th rack travel in: 900

Speed rpm : 0.00...1.00

**BREAKAWAY**

1st version



1mm rack travel less than

full load rack tr: 10.40  
Speed rpm : 750...755

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : RVI 14,9 d  
Edition : 13.05.87  
Replaces : 12.9.86  
Test oil : ISO-4113

Combination no. : 0 402 048 702

Injection pump  
Pump designation : PES8P120A32ORS3146  
EP type number : 0 412 028 702  
Governor  
Governor design. : RQ275/950PA753  
Governor no. : 0 421 801 282

Customer-spec. information  
Customer : RVI

Engine : MIVR083530

1st version kW : 294.0  
Rated speed : 1900

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60  
: (3.45...3.65)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 8- 4- 2- 7- 3-  
6- 5

Phasing : 0-45-90-135-180-225-  
270-315

Tolerance + - ° : 0.50 (0.75)

## BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 12.70...12.80

Del. quantity cm<sup>3</sup>/ : 20.8...21.0

100 s: (20.5...21.3)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 7.9...8.1

Del. quantity cm<sup>3</sup>/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 950

Rack travel in mm : 16.60...18.20

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 700

Del. quantity : 208.0...210.0

1000 : (205.0...213.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 950

Rack travel in mm : 17.4

Testing:

1st rack travel in: 10.50

Speed rpm : 1000...1015

2nd rack travel in: 4.50  
Speed rpm : 1070...1100  
4th rack travel in: 1250  
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 275  
Rack travel in mm : 8.0

Testing:

Speed rpm : 200  
Minimum rack travel: 6.70  
Speed rpm : 275  
Rack travel in mm : 4.60...4.80  
Rack travel in mm : 2.00  
Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : 0.58  
Torque control curve - 1st version  
1st speed rpm : 500  
Rack travel in m: 12.70...12.80  
2nd speed rpm : 950  
Rack travel in m: 11.40...11.50  
3rd speed rpm : 675  
Rack travel in m: 12.40...12.60  
4th speed rpm : 810  
Rack travel in m: 11.70...12.00

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.70...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.70  
2nd pressure hPa : 360  
Rack travel in m: 12.70...12.80  
3rd pressure hPa : 140  
Rack travel in m: 10.30...10.70

START CUT-OUT

Speed 1/min : 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 950

L28

Del. quantity cm<sup>3</sup>/ : 190.0...194.0  
1000 s: (187.0...197.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 119.0...121.0  
1000 s: (116.0...124.0)

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (156.0...184.0)

LOW IDLE

Speed rpm : 275  
Rack travel in mm : 4.60...4.80  
Del. quantity cm<sup>3</sup>/ : 17.0...23.0  
1000 s: (14.0...26.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 11.5° cam angle  
after start of delivery cyl. 1

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : SSC 13,7 a  
 Edition : 30.05.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 048 706  
 Injection pump  
 Pump designation : PES8P120A520/4RS3211  
 EP type number : 0 412 028 706  
 Governor  
 Governor design. : RQV300...1250PA639-1  
 Governor no. : 0 421 813 458

Customer-spec. information  
 Customer : SSCM

Engine : UD 18-V18

1st version kW : 394,0  
 Rated speed : 2500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X1,50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**  
 Test pressure, bar : 25...27

M01

Prestroke mm : 2.80...2.90  
 : (2.75...2.95)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 2- 6- 3- 4- 5-  
 7- 8

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

**BASIC SETTING**

1st speed rpm : 1250

Rack travel in mm : 13.30...13.40

Del. quantity cm<sup>3</sup>/ : 19.9...20.1

100 s : (19.6...20.4)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 8.1...8.3

Del. quantity cm<sup>3</sup>/ : 2.0...2.6

100 s : (1.7...2.9)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.30...1.50

2nd speed rpm : 1000  
 travel mm : 5.70...6.00

3rd speed rpm : 1250  
 travel mm : 7.80...8.00

**GUIDE SLEEVE POSITION**

Speed rpm : 1305  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1250  
 Del. quantity : 199.0...201.0  
 1000 : (196.0...204.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version

Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 12.30  
Speed rpm : 1290...1300  
2nd rack travel in: 4.00  
Speed rpm : 1415...1445  
4th rack travel in: 1550  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 13...21

Testing:  
Speed rpm : 100  
Minimum rack trave: 9.70  
Speed rpm : 300  
Rack travel in mm : 8.10...8.30  
Rack travel in mm : 2.00

CONSTANT REGULATION  
Speed rpm : 350...460

#### START CUT-OUT

Speed 1/min : 220 (240)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.30  
Speed rpm : 1290...1300

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 230.0...250.0  
1000 s: (226.0...254.0)

Remarks:

:

APPLICATION  
Navy

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : VAL 7,2 a  
Edition : 19.05.88  
Replaces : 9.3.87  
Test oil : ISO-4113  
  
Combination no. : 0 402 076 056  
  
Injection pump  
Pump designation : PES6P110A32ORS505  
EP type number : 0 412 016 072  
Governor  
Governor design. : RSV325...1150POAS22  
Governor no. : 0 421 833 242

Customer-spec. information  
Customer : VALMET

Engine : 612 DSJ

1st version kW : 165,0  
Rated speed : 2300

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1,50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness : 6,00x1,50x600  
x Length mm

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 25...27

Prestroke mm : 3,00...3,10  
: (2,95...3,15)  
Rack travel in mm : 9,00...12,00

M03

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.00...12.10

Del. quantity cm<sup>3</sup>/ : 13.8...14.1

100 s : (13.5...14.3)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 325.0

Rack travel in mm : 7.1...7.3

Del. quantity cm<sup>3</sup>/ : 1.2...1.6

100 s : (0.9...1.8)

Spread cm<sup>3</sup> : 0.3

100 s : (0.6)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h : 700

Del. quantity : 138,0...141,0

1000 : (135,5...143,5)

Spread cm<sup>3</sup> : 4,00

1000 : (7,50)

## RATED SPEED

1st version

Control lever

position degrees: 36...44

Testing:

1st rack travel in : 11.00

Speed rpm : 1190...1200

2nd rack travel in : 4.00

Speed rpm : 1290...1310  
4th rack travel in: 1460  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 17...25  
Setting point w/out bumper spring  
Speed rpm : 325  
Rack travel in mm : 6.7

#### Testing:

Speed rpm : 100  
Minimum rack travel: 8.60  
Speed rpm : 325  
Rack travel in mm : 6.60...6.80  
Rack travel in mm : 2.00  
Speed rpm : 460...520

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 700  
Rack travel in m: 12.00...12.10  
2nd speed rpm : 1150  
Rack travel in m: 11.90...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 700  
Rack travel mm : 12.00...12.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.40...10.50  
2nd pressure hPa : 400  
Rack travel in m: 11.50...11.60

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 102.0...105.0  
1000 s: (99.5...107.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.00

MO4

Speed rpm : 1190...1200

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

#### LOW IDLE

Speed rpm : 325  
Rack travel in mm : 7.10...7.30  
Del. quantity cm<sup>3</sup>/ : 12.0...16.0  
1000 s: (9.5...18.5)  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

Delivery-valve spring pre-tension =  
2.40...2.60 mm.  
Permissible alteration from 2.20...2.90  
mm  
Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 11,4 o 3  
 Edition : 11.03.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 076 717  
 Injection pump  
 Pump designation : PES6P120A82OLS3095-1  
 EP type number : 0 412 026 715  
 Governor  
 Governor design. : RSV350...750POA487-4  
 Governor no. : 0 421 833 265

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM407A

1st version kW : 169.0  
 Rated speed : 1500

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10  
 : (3.95...4.15)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 730

Rack travel in mm : 12.40...12.50

Del. quantity cm<sup>3</sup>/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del. quantity cm<sup>3</sup>/ : 3.0...4.0

100 s: (-)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 730

Del. quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm<sup>3</sup> : 5.00

1000 : (8.00)

**RATED SPEED**

1st version

Control lever

position degrees: 29...37



Testing:

1st rack travel in: 11.40  
Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 776...789  
4th rack travel in: 900  
Speed rpm : 0.30...1.40

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.8  
Speed rpm : 350  
Rack travel in mm : 5.70...5.90

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.40  
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 170.0...190.0  
1000 s: (166.0...194.0)

Remarks:

:

APPLICATION

Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 e  
Edition : 16.05.88  
Replaces : 12.9.86  
Test oil : ISO-4113  
Combination no. : 0 402 076 719  
Injection pump  
Pump designation : PES6P110A82OLS3131-1  
EP type number : 0 412 016 717  
Governor  
Governor design. : RSV350...750POA517  
Governor no. : 0 421 833 215

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM427

1st version kW : 142.0  
Rated speed : 1500

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.30...4.40  
: (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del. quantity cm<sup>3</sup>/ : 13.6...13.8

100 s: (13.3...14.1)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 6.9...7.1

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del. quantity : 136.0...138.0

1000 : (133.0...141.0)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 24...32

Testing:

1st rack travel in: 11.20

Speed rpm : 750...755  
2nd rack travel in: 4.00  
Speed rpm : 775...788  
4th rack travel in: 900  
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.0

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 6.90...7.10  
Rack travel in mm : 2.00  
Speed rpm : 360...400

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 11.20  
Speed rpm : 740...750

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 130.0...150.0  
1000 s: (126.0...154.0)

Remarks:

:

Observe VDT-I-420/120  
APPLICATION  
Generator

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y 1  
Edition : 15.06.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 722  
Injection pump  
Pump designation : PES6P120A72ORS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV400...1100P2A534  
Governor no. : 0 421 833 275

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 HF-050

1st version kW : 194,0  
2nd version kW : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6.00x2.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.60...11.70

Del. quantity cm<sup>3</sup>/ : 14.8...15.0

100 s: (14.5...15.2)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del. quantity cm<sup>3</sup>/ : 1.8...2.3

100 s: (1.6...2.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 148.0...150.0

1000 : (145.5...152.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 10.70  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1205...1215  
3rd rack travel in: 4.00  
4th rack travel in: 1300  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 21...29  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.4

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Rack travel in mm : 2.00  
Speed rpm : 535...595

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.60...11.70  
2nd speed rpm : 750  
Rack travel in m: 12.50...12.70

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 9.70...9.90

#### Measurement

Speed 1/min : 500  
1st pressure hPa : 605  
Rack travel in m: 10.50...10.60  
2nd pressure hPa : 820  
Rack travel in m: 11.70...12.10  
3rd pressure hPa : 1200  
Rack travel in m: 12.60...12.80

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 750  
Del. quantity cm<sup>3</sup>/ : 180.0...185.0  
1000 s: (177.5...187.5)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : -  
1000 s: (118.5...128.5)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.70  
Speed rpm : 1145...1155

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.80...5.00  
Del. quantity cm<sup>3</sup>/ : 18.5...23.5  
1000 s: (16.0...26.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE32035

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntrol  
pring retainer.  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 7,6 y  
Edition : 15.06.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 723  
Injection pump  
Pump designation : PES6P120A72ORS3203  
EP type number : 0 412 026 728  
Governor  
Governor design. : RSV400...1100P2A534-  
1  
Governor no. : 0 421 833 276

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6466 AF-050

1st version kW : 180,0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 101

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter  
x Wall thickness  
x Length mm : 6,00x2,00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65  
: (3.50...3.70)  
Rack travel in mm : 10.50...10.50  
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.20...11.30

Del. quantity cm<sup>3</sup>/ : 14.2...14.4

100 s: (13.9...14.6)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

2nd speed rpm : 400,0  
Rack travel in mm : 4.7...4.9  
Del. quantity cm<sup>3</sup>/ : 1.7...2.2  
100 s: (1.5...2.8)

Spread cm<sup>3</sup> : 0.4  
100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -3  
Speed rpm : 800  
Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1100  
Aneroid pressure h: 900  
Del. quantity : 142.0...144,0  
1000 : (139.5...146.5)  
Spread cm<sup>3</sup> : 4,00  
1000 : (7.50)

## RATED SPEED

1st version  
Control lever  
position degrees: 40...48

Testing:  
1st rack travel in: 10.20  
Speed rpm : 1145...1155  
2nd rack travel in: 4.00  
Speed rpm : 1200...1210  
4th rack travel in: 1350  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 16...24  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.3

#### Testing:

Speed rpm : 100  
Minimum rack trave: 19.00  
Speed rpm : 400  
Rack travel in mm : 4.70...4.90  
Rack travel in mm : 2.00  
Speed rpm : 535...595

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.20...11.30  
2nd speed rpm : 700  
Rack travel in m: 12.40...12.60

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.40...12.60

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 10.00...10.20  
2nd pressure hPa : 540  
Rack travel in m: 10.60...10.70  
3rd pressure hPa : 740  
Rack travel in m: 11.80...12.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 900  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 181.0...185.0  
1000 s: (178.0...188.0)  
Aneroid pressure h: -  
Speed rpm : 500

Del. quantity cm<sup>3</sup>/ : -  
1000 s: (127.0...137.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.20  
Speed rpm : 1145...1155

INTERMEDIATE RATED SPEED  
Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 135.0...155.0  
1000 s: (130.0...160.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 4.70...4.90  
Del. quantity cm<sup>3</sup>/ : 17.5...22.5  
1000 s: (15.0...28.0)  
Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. nrol  
pring retainer.  
Start-of-delivery mark 10.5° cam angle  
after start of delivery cyl. 1

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 11,7 d 2  
Edition : 07.03.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 076 725

Injection pump  
Pump designation : PES6P110A82OLS3131-1  
EP type number : 0 412 016 717  
Governor  
Governor design. : RSV350..1050POA487-5  
Governor no. : 0 421 833 285

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM447

1st version kW : 177.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve  
: 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

M13

Prestroke mm : 4.30...4.40  
: (4.25...4.45)  
Rack travel in mm : 9.00...12.00  
Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

## BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.50...112.00

Del. quantity cm<sup>3</sup>/ : 15.0...15.2

100 s: (14.7...15.4)

Spread cm<sup>3</sup> : 0.4

100 s: (0.8)

2nd speed rpm : 350.0

Rack travel in mm : 7.0...7.3

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.4

100 s: (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

Del. quantity : 150.0...152.0

1000 : (147.5...154.5)

Spread cm<sup>3</sup> : 4.00

1000 : (8.00)

## RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 11.50



Speed rpm : 1075...1085  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1350  
Speed rpm : 0.00...1.40

LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 7.1

Testing:

Speed rpm : 100  
Minimum rack trave: 19.50  
Speed rpm : 350  
Rack travel in mm : 7.00...7.30  
Rack travel in mm : 2.00  
Speed rpm : 400...440

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600  
Del.quantity cm3/ : 133.0...137.0  
1000 s: (130.0...140.0)  
Spread cm3 : 6.00  
1000 s: (9.00)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 11.50  
Speed rpm : 1075...1085

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 130.0...150.0  
1000 s: (126.0...154.0)

LOW IDLE

Speed rpm : 350  
Rack travel in mm : 7.00...7.30  
Del.quantity cm3/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm3 : 4.50  
1000 s: (7.00)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : DEE 10,1 f  
Edition : 15.06.88  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 076 726  
Injection pump  
Pump designation : PES6P110A72ORS3209  
EP type number : 0 412 016 722  
Governor  
Governor design. : RSV400...1050POA537  
Governor no. : 0 421 833 287

Customer-spec. information  
Customer : JOHN DEERE

Engine : 6619 A

1st version kW : 168.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 0 681 343 009

Opening  
pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter  
x Wall thickness  
x Length mm : 6.00x3.00x600

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar : 27...29

Prestroke mm : 3.45...3.55  
: (3.40...3.60)  
Rack travel in mm : 10.50...10.50

M15

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 11.10...11.20

Del. quantity cm<sup>3</sup>/ : 16.5...16.7

100 s : (16.2...16.9)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

2nd speed rpm : 400.0

Rack travel in mm : 5.0...5.2

Del. quantity cm<sup>3</sup>/ : 1.6...2.1

100 s : (1.3...2.3)

Spread cm<sup>3</sup> : 0.4

100 s : (0.7)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del. quantity : 165.0...167.0

1000 : (162.5...169.5)

Spread cm<sup>3</sup> : 4.00

1000 : (7.50)

## RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1145...1155

3rd rack travel in: 4.00  
4th rack travel in: 1250  
Speed rpm : 0.30...1.40

#### LOW IDLE 1

Control lever  
position degrees: 20...28  
Setting point w/out bumper spring  
Speed rpm : 400  
Rack travel in mm : 4.6

#### Testing:

Speed rpm : 100  
Minimum rack travel: 19.00  
Speed rpm : 400  
Rack travel in mm : 5.00...5.20  
Rack travel in mm : 2.00  
Speed rpm : 505...565

#### TORQUE CONTROL

Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 11.10...11.20  
2nd speed rpm : 700  
Rack travel in m: 11.80...12.00

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 177.5...182.5  
1000 s: (175.0...185.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 10.10  
Speed rpm : 1090...1100

#### INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 175.0...195.0  
1000 s: (170.0...200.0)  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 400  
Rack travel in mm : 5.00...5.20  
Del. quantity cm<sup>3</sup>/ : 16.0...21.0  
1000 s: (13.5...23.5)

M16

Spread cm<sup>3</sup> : 4.50  
1000 s: (7.50)

#### Remarks:

: JOHN DEERE # RE33898

Adjustment without torque-control  
spring retainer with 1 mm less  
Starting/full-load transition speed  
from holding magnet = 450 1/min. ntrol  
pring retainer.  
Start-of-delivery mark at 14° angular  
displacement of the cam after start of  
delivery of cylinder 1 with control-rod  
travel = 10.50 mm.

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : STE 12,0 c  
Edition : 16.05.88  
Replaces : 13.5.87  
Test oil : ISO-4113

Combination no. : 0 402 638 801

Injection pump  
Pump designation : PE8P12CA12OLS7127  
EP type number : 0 412 628 817  
Governor  
Governor design. : RQ300/1100PA134-2  
Governor no. : 0 421 801 364

Customer-spec. information  
Customer : STEYR

Engine : WD 815.66

1st version kW : 277.0  
Rated speed : 2200

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

BEGINNING OF DELIVERY  
Test pressure, bar: 25...27

M17

Prestroke mm : 5.00...5.10  
                  : (4.95...5.15)  
Rack travel in mm : 9.00...12.00  
Firing order : 1- 5- 4- 8- 6- 3-  
                  7- 2

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.50...11.60

Del. quantity cm<sup>3</sup>/ : 17.6...17.8

100 s: (17.3...18.1)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.5

Del. quantity cm<sup>3</sup>/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.60...16.40

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del. quantity : 176.0...178.0

1000 : (173.0...181.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.0

Testing:

1st rack travel in: 10.50  
Speed rpm : 1145...1160  
2nd rack travel in: 4.00  
Speed rpm : 1210...1240  
4th rack travel in: 1350  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

#### Testing:

Speed rpm : 100  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Rack travel in mm : 2.00  
Speed rpm : 400...440

#### TORQUE CONTROL

Dimension a mm : 0.25  
Torque control curve - 1st version  
1st speed rpm : 1100  
Rack travel in m: 11.50...11.60  
2nd speed rpm : 700  
Rack travel in m: 12.00...12.10  
3rd speed rpm : 1000  
Rack travel in m: 11.60...11.80  
4th speed rpm : 850  
Rack travel in m: 11.80...12.10

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 1200  
Rack travel mm : 12.00...12.10

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 9.50...9.60  
2nd pressure hPa : 760  
Rack travel in m: 11.50...11.60  
3rd pressure hPa : 470  
Rack travel in m: 10.00...10.20

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1200  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 183.0...191.0  
1000 s: (181.0...193.0)

M18

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 122.0...126.0  
1000 s: (120.0...128.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 10.50  
Speed rpm : 1145...1160

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 230.0...260.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 6.30...6.50  
Del. quantity cm<sup>3</sup>/ : 14.0...20.0  
1000 s: (11.0...23.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

Remarks:

:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : SCA 11,0 j1  
 Edition : 07.03.88  
 Replaces : 13.5.87  
 Test oil : ISO-4113

Combination no. : 0 402 646 821

Injection pump  
 Pump designation : PE6P120A72ORS7104  
 EP type number : 0 412 626 807  
 Governor  
 Governor design. : RQV200...1000PA725  
 Governor no. : 0 421 813 457

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DSC 11 01

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1,50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X1,50X600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27

Prestroke mm : 4,50...4,60  
 : (4,45...4,65)

Rack travel in mm : 6,00...8,00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BEGINNING OF DELIVERY DIFFERENCE**

betw. rack trav. m: 7.00...14.70  
 & maximum rack tra: 21.00  
 Difference ° CS : 1.85...2.55

**BASIC SETTING**

1st speed rpm : 700

Rack travel in mm : 14.70...14.80

Del. quantity cm<sup>3</sup>/ : 21.0...21.2

100 s: (20.7...21.5)

Spread cm<sup>3</sup> : 0.7

100 s: (1.0)

2nd speed rpm : 225.0

Rack travel in mm : 4.4...4.6

Del. quantity cm<sup>3</sup>/ : 1.4...1.8

100 s: (-)

Spread cm<sup>3</sup> : 0.3

100 s: (0.6)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 225  
 travel mm : 1.20...1.60

2nd speed rpm : 350  
 travel mm : 2.40...3.00

3rd speed rpm : 650  
 travel mm : 4.50...5.10

4th speed rpm : 1045  
 travel mm : 8.40...8.60

5th speed rpm : 1165  
 travel mm : 10.00...10.40

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
Speed rpm : 700  
Aneroid pressure h: 900  
Del. quantity : 210.0...212.0  
1000 : (207.0...215.0)  
Spread cm3 : 7.00  
1000 : (10.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 13.70  
Speed rpm : 1040...1050  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 5...13

Testing:  
Speed rpm : 100  
Minimum rack travel: 5.90  
Speed rpm : 225  
Rack travel in mm : 4.40...4.60  
Rack travel in mm : 2.00  
Speed rpm : 310...370

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 14.70...14.80

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.80...11.90  
2nd pressure hPa : 410  
Rack travel in m: 14.00...14.10  
3rd pressure hPa : 290  
Rack travel in m: 12.40...12.60

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000

M20

Del. quantity cm3/ : 201.0...209.0  
1000 s: (199.0...211.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm3/ : 164.0...168.0  
1000 s: (162.0...170.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.70  
Speed rpm : 1040...1050

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm3/ : 240.0...290.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.40...4.60  
Del. quantity cm3/ : 14.0...18.0  
1000 s: (-)  
Spread cm3 : 3.00  
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over  
on May 17, 1984  
Start of delivery - engine: 22° before  
TDC at control-rod travel = 6.0...  
8.0 mm  
Firing sequence of engine:  
1-5-3-6-2-4.



## BOSCH INJ. PUMP TEST SPECIFICATIONS

### Note remarks

Test sheet : MB 11,0 t  
 Edition : 13.06.88  
 Replaces : 9.10.87  
 Test oil : ISO-4113

Combination no. : 0 402 646 838

Injection pump  
 Pump designation : PE6P120A320LS7808  
 EP type number : 0 412 626 816  
 Governor  
 Governor design. : RQ300/1050PA762-4  
 Governor no. : 0 421 801 390

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : 0M441 LA

1st version kW : 240,0  
 Rated speed : 2100

### TEST BENCH REQUIREMENTS

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X1,50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

### BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del. quantity cm<sup>3</sup>/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300,0

Rack travel in mm : 5.7...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

### GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del. quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

### RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:  
1st rack travel in: 13.70  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 5.8

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.70...6.00  
Rack travel in mm : 2.00  
Speed rpm : 370...410

#### TORQUE CONTROL

Dimension a mm : 0.30  
2nd speed rpm : 1050  
Rack travel in m: 14.70...14.90  
3rd speed rpm : 800  
Rack travel in m: 15.10...15.30

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

#### Measurement

Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 550  
Rack travel in m: 12.70...12.90  
3rd pressure hPa : 1050  
Rack travel in m: 14.00...14.10  
4th pressure hPa : 1150  
Rack travel in m: 14.40...14.60  
5th pressure hPa : -  
Rack travel in m: 9.50...9.80

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1350  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 236.0...239.0  
1000 s: (233.0...242.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 243.0...247.0  
1000 s: (240.0...250.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 13.70  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 205.0...225.0  
1000 s: (201.0...229.0)

Remarks:

**BOSCH INJ. PUMP TEST SPECIFICATIONS****Note remarks**

Test sheet : MB 11,0 t 2  
 Edition : 25.03.88  
 Replaces : 27.3.87  
 Test oil : ISO-4113

Combination no. : 0 402 646 843

Injection pump  
 Pump designation : PE6P120A32OLS7808  
 EP type number : 0 412 626 816  
 Governor  
 Governor design. : RQV300...1050PA797-2  
 Governor no. : 0 421 813 614

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM441 LA

1st version kW : 240.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

**BASIC SETTING**

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del. quantity cm<sup>3</sup>/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6

100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.20...1.40

2nd speed rpm : 600  
 travel mm : 4.90...5.10

3rd speed rpm : 1075  
 travel mm : 7.40...7.60

4th speed rpm : 1100  
 travel mm : 8.00...8.40

5th speed rpm : 1150  
 travel mm : 9.00...9.40

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 900  
Del. quantity : 211.0...213.0  
1000 : (208.0...216.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

Testing:  
1st rack travel in: 13.80  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1170...1200  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 300  
Rack travel in mm : 5.50...5.80

CONSTANT REGULATION  
Speed rpm : 300...450

TORQUE CONTROL  
Dimension a mm : 0.30  
2nd speed rpm : 1050  
Rack travel in m: 14.60...14.80  
3rd speed rpm : 800  
Rack travel in m: 15.90...15.10  
4th speed rpm : 700

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.90...14.10

Measurement  
Speed 1/min : 600

1st pressure hPa : 300  
Rack travel in m: 10.70...10.90  
2nd pressure hPa : 550  
Rack travel in m: 12.70...12.90

3rd pressure hPa : 1050  
Rack travel in m: 14.00...14.10  
4th pressure hPa : 1150  
Rack travel in m: 14.40...14.60  
5th pressure hPa : -  
Rack travel in m: 9.00...9.30

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1350  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 236.0...239.0  
1000 s: (233.0...242.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1350  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 242.0...246.0  
1000 s: (239.0...249.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack travel: 13.80  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 190.0...210.0  
1000 s: (186.0...214.0)

Remarks: :

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : UNI 13,8 e  
 Edition : 26.02.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 646 859  
 Injection pump  
 Pump designation : PE6P130A72ORS7153  
 EP type number : 0 412 636 809  
 Governor  
 Governor design. : RQV300...950PA883  
 Governor no. : 0 421 813 690

Customer-spec. information  
 Customer : IVECO-UNIC

Engine : 8210.42.300

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter  
 x Wall thickness  
 x Length mm : 8,00x3,00x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27  
 Prestroke mm : 5,00...5,10  
 : (4,95...5,15)  
 Rack travel in mm : 9,00...12,00

M26

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 950  
 -----  
 Rack travel in mm : 12.80...12.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 29.7...30.0  
 -----  
 100 s : (29.3...30.3)  
 -----  
 Spread cm<sup>3</sup> : 0.6  
 -----  
 100 s : (1.0)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 2.9...3.1  
 Del. quantity cm<sup>3</sup>/ : 1.9...2.5  
 100 s : (1.5...2.9)  
 Spread cm<sup>3</sup> : 1.0  
 100 s : (1.4)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.10...1.50  
 2nd speed rpm : 450  
 travel mm : 2.80...3.40  
 3rd speed rpm : 700  
 travel mm : 5.10...5.50  
 4th speed rpm : 950  
 travel mm : 7.10...7.30

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1000  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 950  
 Aneroid pressure h : 900  
 Del. quantity : 297,0...300,0  
 1000 : (293,5...303,5)  
 Spread cm<sup>3</sup> : 6,00  
 1000 : (10,00)

## RATED SPEED

1st version  
Control lever  
position degrees: 61...69

### Testing:

1st rack travel in: 11.80  
Speed rpm : 990...1000  
2nd rack travel in: 4.00  
Speed rpm : 1070...1100  
4th rack travel in: 1200  
Speed rpm : 0.00...1.00

### LOW IDLE 1

Control lever  
position degrees: 3...11  
Speed rpm : 300  
Rack travel in mm : 2.90...3.10

### CONSTANT REGULATION

Speed rpm : 310...430

### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 12.80...12.90

#### Measurement

Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 8.30...8.50  
2nd pressure hPa : 500  
Rack travel in m: 11.80...11.90  
3rd pressure hPa : 380  
Rack travel in m: 9.20...9.60

### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 157.0...160.0  
1000 s: (153.5...163.5)

### BREAKAWAY

#### 1st version

1mm rack travel less than  
full load rack tr: 11.80  
Speed rpm : 990...1000

M27

## INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

## STARTING FUEL DELIVERY

Speed rpm : 100

### LOW IDLE

Speed rpm : 300  
Rack travel in mm : 2.90...3.10  
Del. quantity cm<sup>3</sup>/ : 19.0...25.0  
1000 s: (15.0...29.0)  
Spread cm<sup>3</sup> : 10.00  
1000 s: (14.00)

Remarks:

:

Check electrically unlatched starting  
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,  
the start position must be reached.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

**Note remarks**

Test sheet : SCA 14,2 a1  
 Edition : 26.02.88  
 Replaces : 6.10.86  
 Test oil : ISU-4113  
 Combination no. : 0 402 648 802  
 Injection pump  
 Pump designation : PE8P120A920/4LS7002S  
 EP type number : 0 412 628 800  
 Governor  
 Governor design. : RQV200...1050PA547  
 Governor no. : 0 421 813 293

Customer-spec. information  
 Customer : SAAB-SCANIA

Engine : DS14 07

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42  
 Overflow valve : 1 417 413 025  
 Inlet press., bar : 1.50  
 Test nozzle holder  
 assembly : 1 688 901 019  
 Opening  
 pressure, bar : 207...210  
 Orifice plate  
 diameter mm : 0,8  
 Test lines : 1 680 750 015  
 Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar : 25...27  
 Prestroke mm : 5.00...5.10  
 : (4.95...5.15)  
 Rack travel in mm : 9.00...12.00

M28

Firing order : 1- 2- 7- 3- 4- 5-  
 6- 8

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

**BASIC SETTING**

1st speed rpm : 700  
 -----  
 Rack travel in mm : 13.20...13.30  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.7...18.9  
 -----  
 100 s : (18.4...19.2)  
 -----  
 Spread cm<sup>3</sup> : 0.6  
 -----  
 100 s : (0.9)  
 -----

2nd speed rpm : 225.0  
 Rack travel in mm : 4.9...5.1  
 Del. quantity cm<sup>3</sup>/ : 1.0...1.4  
 100 s : (-)  
 Spread cm<sup>3</sup> : 0.3  
 100 s : (0.6)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 225  
 travel mm : 1.20...1.40  
 2nd speed rpm : 280  
 travel mm : 1.80...2.10  
 3rd speed rpm : 350  
 travel mm : 2.40...2.80  
 4th speed rpm : 1090  
 travel mm : 8.40...8.60  
 5th speed rpm : 1200  
 travel mm : 9.80...10.10

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1100  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 700  
 Aneroid pressure h : 900  
 Del. quantity : 187.0...189.0  
 1000 : (184.0...192.0)

Spread cm<sup>3</sup> : 6.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 57...65

Testing:  
1st rack travel in: 12.20  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1185...1215  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 6...14

Testing:  
Speed rpm : 100  
Minimum rack travel: 6.40  
Speed rpm : 225  
Rack travel in mm : 4.90...5.10  
Rack travel in mm : 2.00  
Speed rpm : 340...400

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : 900  
Rack travel mm : 13.20...13.30

Measurement  
Speed 1/min : 500

1st pressure hPa : -  
Rack travel in m: 11.30...11.40  
2nd pressure hPa : 350  
Rack travel in m: 12.80...12.90  
3rd pressure hPa : 230  
Rack travel in m: 11.90...12.10

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 1000  
Del. quantity cm<sup>3</sup>/ : 184.0...192.0  
1000 s: (182.0...194.0)  
Aneroid pressure h: -  
Speed rpm : 500

N01

Del. quantity cm<sup>3</sup>/ : 137.0...141.0  
1000 s: (135.0...143.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 12.20  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...290.0  
Rack travel in mm : 20.00...21.00

#### LOW IDLE

Speed rpm : 225  
Rack travel in mm : 4.90...5.10  
Del. quantity cm<sup>3</sup>/ : 10.0...14.0  
Spread cm<sup>3</sup> : 3.00  
1000 s: (6.00)

#### Remarks:

Delivery-valve spring pre-tension  
3.2...3.4 mm.  
Permissible alteration of 3.0...3.5 mm  
Because of flattening, set the spring  
preload on new delivery-valve holders  
to 2.9...3.1 mm.

#### ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see  
VDT-I-400/116.

For sealing see VDT-I-400/117.



Scania test specifications taken over  
on Aug. 19, 1983  
Engine start of delivery: 18° BTDC

Engine firing sequence: 1-5-4-2-6-3-7-8

NO2

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 a 1  
Edition : 22.04.88  
Replaces : 18.9.87  
Test oil : ISO-4113

Combination no. : 0 402 648 812

Injection pump  
Pump designation : PE8P120A320LS7801  
EP type number : 0 412 628 806  
Governor  
Governor design. : RQ300/1050PA717  
Governor no. : 0 421 801 258

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values \_\_\_\_\_

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600  
-----  
Rack travel in mm : 14.70...14.90  
-----  
Del. quantity cm<sup>3</sup>/ : 22.0...22.2  
-----  
100 s: (21.7...22.5)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 6.1...6.7  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 600  
Aneroid pressure h: 680  
Del. quantity : 220.0...222.0  
1000 : (217.0...225.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.4

Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.10...6.70  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.35  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600  
1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 820  
Rack travel in m: 14.90...15.10  
4th pressure hPa : 1100  
Rack travel in m: 15.90...16.00  
5th pressure hPa : -  
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

NO4

1st version

Aneroid pressure h: 1150  
Speed rpm : 1050  
Del.quantity cm3/ : 229.0...232.0  
1000 s: (226.0...235.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del.quantity cm3/ : 247.0...251.0  
1000 s: (244.0...254.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 14.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 b  
 Edition : 25.03.88  
 Replaces : 18.9.87  
 Test oil : ISO-4113

Combination no. : 0 402 648 824

Injection pump  
 Pump designation : PE8P120A320LS7801  
 EP type number : 0 412 628 806  
 Governor  
 Governor design. : RQV300..1050PA797  
 Governor no. : 0 421 813 532

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

N05

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600  
 -----  
 Rack travel in mm : 14.70...14.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 22.0...22.2  
 -----  
 100 s: (21.7...22.5)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 6.2...6.6  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**  
 1st speed rpm : 300  
 travel mm : 1.20...1.40  
 2nd speed rpm : 600  
 travel mm : 4.90...5.10  
 3rd speed rpm : 1075  
 travel mm : 7.40...7.60  
 4th speed rpm : 1100  
 travel mm : 8.00...8.20  
 5th speed rpm : 1150  
 travel mm : 9.00...9.20

**GUIDE SLEEVE POSITION**  
 Control-lever position  
 Degree: =1  
 Speed rpm : 1125  
 Rack travel in mm : 16.50...18.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
Speed rpm : 600  
Aneroid pressure h: 680  
Del. quantity : 220.0...222.0  
1000 : (217.0...225.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 54...62

Testing:  
1st rack travel in: 14.20  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1  
Control lever  
position degrees: 15...23

Testing:  
Speed rpm : 100  
Minimum rack travel: 7.90  
Speed rpm : 300  
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 850  
Rack travel in m: 15.80...16.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 680  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 600

1st pressure hPa : 310  
Rack travel in m: 12.10...12.30  
2nd pressure hPa : 470  
Rack travel in m: 13.70...13.90

M06

3rd pressure hPa : 820  
Rack travel in m: 14.90...15.00  
4th pressure hPa : 1100  
Rack travel in m: 15.90...16.00  
5th pressure hPa : -  
Rack travel in m: 11.40...11.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version:  
Aneroid pressure h: 1150  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 228.0...234.0  
1000 s: (225.0...237.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1150  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 247.0...251.0  
1000 s: (244.0...254.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 14.20  
Speed rpm : 1095...1110

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 200.0...220.0  
1000 s: (196.0...224.0)

Remarks:

:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

## Note remarks

Test sheet : MB 14,7 a10  
 Edition : 11.03.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 833

Injection pump  
 Pump designation : PE8P120A32OLS7801-1  
 EP type number : 0 412 628 818  
 Governor  
 Governor design. : RQV300..10SOPA866-3  
 Governor no. : 0 421 813 703

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : 0M442 A

1st version kW : 260,0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x wall thickness  
 x Length mm : 6.00X1,50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 1050  
 -----  
 Rack travel in mm : 12.80...12.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 18.1...18.3  
 -----  
 100 s: (17.8...18.6)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 5.6...6.0  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300  
 travel mm : 1.20...1.40  
 2nd speed rpm : 600  
 travel mm : 4.90...5.10  
 3rd speed rpm : 1100  
 travel mm : 8.00...8.50  
 4th speed rpm : 1170  
 travel mm : 9.20...9.80

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1090  
 Rack travel in mm : 16.50...18.00

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1050  
Aneroid pressure h: 1100  
Del. quantity : 181.0...183.0  
1000 : (178.0...186.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 59...67

Testing:  
1st rack travel in: 11.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.50

#### LOW IDLE 1

Control lever  
position degrees: 7...15

Testing:  
Speed rpm : 200  
Minimum rack travel: 7.30  
Speed rpm : 300  
Rack travel in mm : 5.60...5.80

#### CONSTANT REGULATION

Speed rpm : 300...500

#### TORQUE CONTROL

Dimension a mm : 1.60  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 12.80...12.90  
2nd speed rpm : 750  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 950  
Rack travel in m: 13.50...13.60  
4th speed rpm : 830  
Rack travel in m: 14.30...14.50

Aneroid/Altitude  
Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : -  
Rack travel mm : 11.20...11.50

#### Measurement

Speed 1/min : 600

1st pressure hPa : 420

NO8

Rack travel in m: 11.90...12.10  
2nd pressure hPa : 600  
Rack travel in m: 13.60...13.80

#### START CUT-OUT

Speed 1/min : 270 (250)

#### FUEL DELIVERY CHARACTERISTICS

##### 1st version

Aneroid pressure h: 1100  
Speed rpm : 700  
Del. quantity cm<sup>3</sup>/ : 213.0...217.0  
1000 s: (210.0...220.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1100  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 152.0...154.0 \*  
1000 s: (149.0...157.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 143.0...145.0  
1000 s: (140.0...148.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

##### 1st version

1mm rack travel less than

full load rack tr: 11.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 180.0...200.0  
1000 s: (176.0...204.0)

Remarks:

:

\* = Set at reduced-delivery stop.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 i  
 Edition : 22.04.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 843

Injection pump  
 Pump designation : PE8P120A320LS7815  
 EP type number : 0 412 628 827  
 Governor  
 Governor design. : RQV350..1050PAB70-2  
 Governor no. : 0 421 813 687

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : 0M442LA

1st version kW : 350.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 1050  
 -----  
 Rack travel in mm : 15.10...15.20  
 -----  
 Del. quantity cm<sup>3</sup>/ : 25.4...25.6  
 -----  
 100 s: (25.1...25.9)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 5.0...5.6  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s: (1.0)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 350  
 travel mm : 1.90...2.10  
 2nd speed rpm : 700  
 travel mm : 4.10...4.50  
 3rd speed rpm : 1100  
 travel mm : 7.60...8.00  
 4th speed rpm : 1200  
 travel mm : 9.50...9.90

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -1  
 Speed rpm : 1150  
 Rack travel in mm : 15.20...17.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version



Speed rpm : 1050  
Aneroid pressure h : 1700  
Del. quantity : 254.0...256.0  
1000 : (251.0...259.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 61...69

#### Testing:

1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1190...1220  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 9...17

#### Testing:

Speed rpm : 200  
Minimum rack travel: 7.70  
Speed rpm : 350  
Rack travel in mm : 5.00...5.60

#### CONSTANT REGULATION

Speed rpm : 350...600

#### TORQUE CONTROL

Dimension a mm : 0.30  
Torque control curve - 1st version  
1st speed rpm : 1050  
Rack travel in m: 15.10...15.20  
2nd speed rpm : 1000  
Rack travel in m: 15.20...15.40  
3rd speed rpm : 930  
Rack travel in m: 15.40...15.50

#### Aneroid/Altitude Compensator Test

#### 1st version

Setting  
Speed rpm : 600  
Pressure hPa : 1000  
Rack travel mm : 14.50...14.70

#### Measurement

Speed 1/min : 600

1st pressure hPa : 330  
Rack travel in m: 10.20...10.40  
2nd pressure hPa : 600

N10

Rack travel in m: 13.10...13.30  
3rd pressure hPa : 1260  
Rack travel in m: 14.70...14.90  
4th pressure hPa : 1400  
Rack travel in m: 15.10...15.30  
5th pressure hPa : -  
Rack travel in m: 8.80...9.20

#### START CUT-OUT

Speed 1/min : 270 (290)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 1000  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 239.0...241.0  
1000 s: (236.0...244.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1700  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 264.0...267.0  
1000 s: (261.0...270.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 194.0...196.0 \*  
1000 s: (191.0...199.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 139.0...141.0  
1000 s: (136.0...144.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

#### BREAKAWAY

#### 1st version

1mm rack travel less than

full load rack tr: 14.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 260.0...280.0  
1000 s: (256.0...284.0)

Remarks:

:

\* = Set at reduced-delivery stop.

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 14,7 j  
 Edition : 08.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 648 844

Injection pump  
 Pump designation : PE8P120A32OLS7816  
 EP type number : 0 412 628 829  
 Governor  
 Governor design. : RQ300/1050PA717-2  
 Governor no. : 0 421 801 439

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...120

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 20.00...21.00  
 Firing order : 8- 7- 2- 6- 3- 5-  
 4- 1

Phasing : 0-45-90-135-180-225-  
 270-315  
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

**BASIC SETTING**

1st speed rpm : 600  
 -----  
 Rack travel in mm : 13.60...13.80  
 -----  
 Del. quantity cm<sup>3</sup>/ : 23.4...23.7  
 -----  
 100 s : (23.1...24.0)  
 -----  
 Spread cm<sup>3</sup> : 0.6  
 -----  
 100 s : (0.9)  
 -----

2nd speed rpm : 300.0  
 Rack travel in mm : 5.9...6.5  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s : (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.6  
 100 s : (1.0)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -2  
 Speed rpm : 600  
 Rack travel in mm : 19.20...20.80

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 600  
 Aneroid pressure h: 900  
 Del. quantity : 234.0...237.0  
 1000 : (231.0...240.0)  
 Spread cm<sup>3</sup> : 6.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
 Setting point:  
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 13.00  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.2

Testing:

Speed rpm : 200  
Minimum rack travel: 7.80  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50  
Rack travel in mm : 2.00  
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40  
2nd speed rpm : 1050  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 800  
Rack travel in m: 14.90...15.10

Aneroid/Altitude  
Compensator Test

1st version

Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600  
1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650  
Rack travel in m: 12.80...13.00  
3rd pressure hPa : 1350  
Rack travel in m: 14.50...14.70  
4th pressure hPa : 1500  
Rack travel in m: 14.80...14.90  
5th pressure hPa : -  
Rack travel in m: 9.90...10.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600  
Speed rpm : 1050  
Del.quantity cm<sup>3</sup>/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del.quantity cm<sup>3</sup>/ : 263.0...267.0  
1000 s: (260.0...270.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 k  
Edition : 16.06.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 845

Injection pump  
Pump designation : PE8P120A320LS7816  
EP type number : 0 412 628 829  
Governor  
Governor design. : RQV300..1050PA797-5  
Governor no. : 0 421 813 702

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1,50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)  
Rack travel in mm : 20.00...21.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315  
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600  
-----  
Rack travel in mm : 13.60...13.80  
-----  
Del. quantity cm<sup>3</sup>/ : 23.4...23.7  
-----  
100 s: (23.1...24.0)  
-----  
Spread cm<sup>3</sup> : 0.5  
-----  
100 s: (0.9)  
-----

2nd speed rpm : 300.0  
Rack travel in mm : 5.9...6.5  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40  
2nd speed rpm : 800  
travel mm : 5.80...6.10  
3rd speed rpm : 1120  
travel mm : 8.20...8.80  
4th speed rpm : 1180  
travel mm : 9.60...10.40

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1  
Speed rpm : 1100  
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h: 900  
Del. quantity : 234.0...237.0  
1000 : (231.0...240.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 53...61

Testing:  
1st rack travel in: 13.40  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1160...1190  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 1.30  
2nd speed rpm : 1050  
Rack travel in m: 14.40...14.60  
3rd speed rpm : 800  
Rack travel in m: 14.90...15.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 13.60...13.80

Measurement  
Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 11.10...11.30  
2nd pressure hPa : 650  
Rack travel in m: 12.90...13.00  
3rd pressure hPa : 1350  
Rack travel in m: 14.50...14.70

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4th pressure hPa : 1500  
Rack travel in m: 14.80...14.90  
5th pressure hPa : -  
Rack travel in m: 9.90...10.20

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1600  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 252.0...256.0  
1000 s: (249.0...259.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1600  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 263.0...267.0  
1000 s: (260.0...270.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 145.0...147.0  
1000 s: (142.0...150.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.40  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks: :

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 m  
Edition : 16.05.88  
Replaces : -  
Test oil : ISO-4113

Combination no. : 0 402 648 849

Injection pump  
Pump designation : PE8P120A320LS7810  
EP type number : 0 412 628 819  
Governor  
Governor design. : RGV300..1050PA797-7  
Governor no. : 0 421 813 707

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 368.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6,00x1,50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (5.15...5.35)

Rack travel in mm : 19.50...21.00

Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del. quantity cm<sup>3</sup>/ : 23.9...24.1  
100 s: (23.6...24.4)

Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.2...6.6

Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.6  
100 s: (1.0)

(B) Setting of injection pump  
with governor

## GUIDE SLEEVE TRAVEL

1st speed rpm : 300  
travel mm : 1.20...1.40

2nd speed rpm : 800  
travel mm : 5.80...6.10

3rd speed rpm : 1120  
travel mm : 8.20...8.80

4th speed rpm : 1180  
travel mm : 9.60...10.40

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600  
Aneroid pressure h : 900  
Del. quantity : 239.0...241.0  
1000 : (236.0...244.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 56...64

Testing:  
1st rack travel in: 14.10  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1165...1195  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

LOW IDLE 1  
Control lever  
position degrees: 18...26

Testing:  
Speed rpm : 200  
Minimum rack trave: 8.00  
Speed rpm : 300  
Rack travel in mm : 5.80...6.10

CONSTANT REGULATION  
Speed rpm : 300...500

TORQUE CONTROL  
Dimension a mm : 0.25  
2nd speed rpm : 1050  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 800  
Rack travel in m: 13.30...15.50

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 900  
Rack travel mm : 14.30...14.50

Measurement  
Speed 1/min : 600

1st pressure hPa : 320  
Rack travel in m: 9.90...10.10  
2nd pressure hPa : 620  
Rack travel in m: 13.00...13.20  
3rd pressure hPa : 1100  
Rack travel in m: 14.40...14.50

4th pressure hPa : -  
Rack travel in m: 8.70...8.90

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1500  
Speed rpm : 1050  
Del. quantity cm<sup>3</sup>/ : 257.0...260.0  
1000 s: (254.0...263.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.)  
Aneroid pressure h: 1500  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 265.0...269.0  
1000 s: (262.0...272.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 133.0...135.0  
1000 s: (130.0...138.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.00)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full lead rack tr: 14.10  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks: :



**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 21,9 y 2  
 Edition : 13.06.88  
 Replaces : 12.11.87  
 Test oil : ISO-4113

Combination no. : 0 402 670 805

Injection pump  
 Pump designation : PE12P120A32QLS7807-2  
 EP type number : 0 412 620 812  
 Governor  
 Governor design. : RSV375..1050POA535-1  
 Governor no. : 0 421 833 282

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kW : 491,0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

**BASIC SETTING**

1st speed rpm : 650  
 -----  
 Rack travel in mm : 14.70...14.90  
 -----  
 Del. quantity cm<sup>3</sup>/ : 21.6...21.9  
 -----  
 100 s: (21.3...22.2)

Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)

2nd speed rpm : 375.0  
 Rack travel in mm : 5.5...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 650  
 Aneroid pressure h: 800  
 Del. quantity : 216.0...219.0  
 1000 : (213.0...222.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 13.70  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 375  
Rack travel in mm : 5.6

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 375  
Rack travel in mm : 5.50...5.80

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 14.70...14.90  
2nd speed rpm : 925  
Rack travel in m: 15.10...15.30  
3rd speed rpm : 830  
Rack travel in m: 15.50...15.70

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 800  
Rack travel mm : 14.70...14.90

Measurement  
Speed 1/min : 600

1st pressure hPa : 350  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 1000  
Rack travel in m: 15.00...15.20  
4th pressure hPa : 1100  
Rack travel in m: 15.40...15.60  
5th pressure hPa : -  
Rack travel in m: 10.30...10.60

## FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1250  
Speed rpm : 1030  
Del. quantity cm<sup>3</sup>/ : 221.0...223.0  
1000 s: (218.0...226.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 800  
Del. quantity cm<sup>3</sup>/ : 237.0...241.0  
1000 s: (234.0...244.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 134.0...136.0  
1000 s: (131.0...139.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

## BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 13.70  
Speed rpm : 1070...1080

## STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:  
:

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 21,9 y 3  
 Edition : 08.06.88  
 Replaces : -  
 Test oil : ISO-4113

Combination no. : 0 402 670 806

Injection pump  
 Pump designation : PE12P120A32OLS7807-2  
 EP type number : 0 412 620 812  
 Governor  
 Governor design. : RSV350..1050POA538  
 Governor no. : 0 421 833 300

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM 444 A

1st version kW : 390.0  
 Rated speed : 2100

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 150...170

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6,00X1,50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values -----

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 12- 1- 5- 9- 8- 3-  
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-  
 180-225-240-285-300-  
 345  
 Tolerance ± ° : 0.50 (0.75)  
 Time to cyl. no. : 12

**BASIC SETTING**

1st speed rpm : 1030  
 -----  
 Rack travel in mm : 12.40...12.50  
 -----  
 Del. quantity cm<sup>3</sup>/ : 17.2...17.4  
 -----  
 100 s: (16.9...17.7)  
 -----  
 Spread cm<sup>3</sup> : 0.5  
 -----  
 100 s: (0.9)  
 -----

2nd speed rpm : 350.0  
 Rack travel in mm : 5.6...5.8  
 Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
 100 s: (1.3...2.5)  
 Spread cm<sup>3</sup> : 0.8  
 100 s: (1.2)

**GUIDE SLEEVE POSITION**

Control-lever position  
 Degree: -3  
 Speed rpm : 800  
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension  
 Click setting x : ?

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version  
 Speed rpm : 1030  
 Aneroid pressure h: 900  
 Del. quantity : 172.0...174.0  
 1000 : (169.0...177.0)  
 Spread cm<sup>3</sup> : 5.00  
 1000 : (9.00)

**RATED SPEED**

1st version  
Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 11.40  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 9.50  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 12.40...12.50  
2nd speed rpm : 950  
Rack travel in m: 12.90...13.10  
3rd speed rpm : 875  
Rack travel in m: 13.40...13.60  
4th speed rpm : 750  
Rack travel in m: 13.90...14.10

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 10.50...10.80

Measurement  
Speed 1/min : 500

1st pressure hPa : 300  
Rack travel in m: 11.30...11.50  
2nd pressure hPa : 500  
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 900  
Speed rpm : 700  
Del.quantity cm3/ : 206.0...210.0  
1000 s: (203.0...213.0)  
Spread cm3 : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del.quantity cm3/ : 136.0...138.0  
1000 s: (133.0...141.0)  
Spread cm3 : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 11.40  
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100  
Del.quantity cm3/ : 220.0...240.0  
1000 s: (216.0...244.0)

Remarks:  
:

# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 14,7 g 3  
Edition : 08.06.88  
Replaces : 7.12.87  
Test oil : ISO-4113

Combination no. : 0 402 678 808

Injection pump  
Pump designation : PE8P120A320LS7801-2  
EP type number : 0 412 628 825  
Governor  
Governor design. : RSV350...1050POAS35  
Governor no. : 0 421 833 281

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM442LA

1st version kW : 320.0  
Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
quantity min. 1/h: 100...120

Test nozzle holder  
assembly : 1 688 901 019

Opening  
pressure, bar : 207...210

Orifice plate  
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values -----

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
                  : (4.15...5.35)  
Rack travel in mm : 9.00...12.00  
Firing order : 8- 7- 2- 6- 3- 5-  
                  4- 1

Phasing : 0-45-90-135-180-225-  
                  270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.60

Del. quantity cm<sup>3</sup>/ : 21.5...21.8

100 s : (21.2...22.1)

Spread cm<sup>3</sup> : 0.5

100 s : (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...5.8

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s : (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s : (1.2)

## GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 750

Del. quantity : 215.0...218.0

1000 : (212.0...221.0)

Spread cm<sup>3</sup> : 5.00

1000 : (9.00)

## RATED SPEED

1st version

Control lever  
position degrees: 36...44

Testing:  
1st rack travel in: 14.00  
Speed rpm : 1070...1080  
2nd rack travel in: 4.00  
Speed rpm : 1130...1160  
4th rack travel in: 1400  
Speed rpm : 0.30...1.40

LOW IDLE 1  
Control lever  
position degrees: 13...21  
Setting point w/out bumper spring  
Speed rpm : 350  
Rack travel in mm : 5.7

Testing:  
Speed rpm : 100  
Minimum rack travel: 19.50  
Speed rpm : 350  
Rack travel in mm : 5.60...5.80  
Rack travel in mm : 2.00  
Speed rpm : 360...420

SET IDLE AUXILIARY SPRING  
Rack travel in mm : 2.00

TORQUE CONTROL  
Torque control curve - 1st version  
1st speed rpm : 1030  
Rack travel in m: 15.00...15.20  
2nd speed rpm : 850  
Rack travel in m: 15.70...15.90  
3rd speed rpm : 925  
Rack travel in m: 15.40...15.60

Aneroid/Altitude  
Compensator Test

1st version  
Setting  
Speed rpm : 600  
Pressure hPa : 750  
Rack travel mm : 14.50...14.60

Measurement  
Speed 1/min : 600

1st pressure hPa : 400  
Rack travel in m: 12.20...12.40  
2nd pressure hPa : 550  
Rack travel in m: 13.70...13.90  
3rd pressure hPa : 950  
Rack travel in m: 14.90...15.10  
4th pressure hPa : 1050  
Rack travel in m: 15.30...15.50  
5th pressure hPa : -

N23

Rack travel in m: 11.20...11.50

#### FUEL DELIVERY CHARACTERISTICS

1st version  
Aneroid pressure h: 1250  
Speed rpm : 1030  
Del. quantity cm<sup>3</sup>/ : 230.0...232.0  
1000 s: (227.0...235.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 1250  
Speed rpm : 850  
Del. quantity cm<sup>3</sup>/ : 242.0...245.0  
1000 s: (239.0...248.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 147.0...149.0  
1000 s: (144.0...152.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (-)

#### BREAKAWAY

1st version  
1mm rack travel less than  
full load rack tr: 14.00  
Speed rpm : 1070...1080

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 240.0...260.0  
1000 s: (236.0...264.0)

Remarks:

Observe VDT-I-420/120

0

**BOSCH INJ. PUMP TEST SPECIFICATIONS**

Note remarks

Test sheet : MB 10,0 c 2  
 Edition : 29.04.88  
 Replaces : -  
 Test oil : ISO-4113  
 Combination no. : 0 402 745 801  
 Injection pump  
 Pump designation : PESSP120A720LS7101  
 EP type number : 0 412 725 800  
 Governor  
 Governor design. : RQV300..1050PA759  
 Governor no. : 0 421 813 489

Customer-spec. information  
 Customer : DAIMLER-BENZ

Engine : OM429 LA

**TEST BENCH REQUIREMENTS**

Test oil  
 inlet temp. °C : 38...42

Overflow valve  
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow  
 quantity min. 1/h: 100...110

Test nozzle holder  
 assembly : 1 688 901 019

Opening  
 pressure, bar : 207...210

Orifice plate  
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter  
 x Wall thickness  
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values  
 Insp. values in parentheses  
 Set equal delivery quant.  
 per values \_\_\_\_\_

**BEGINNING OF DELIVERY**

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30  
 : (5.15...5.35)  
 Rack travel in mm : 9.00...12.00  
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

**BASIC SETTING**

1st speed rpm : 1050

Rack travel in mm : 13.80...13.90

Del. quantity cm<sup>3</sup>/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm<sup>3</sup> : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del. quantity cm<sup>3</sup>/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm<sup>3</sup> : 0.8

100 s: (1.2)

(B) Setting of injection pump  
 with governor

**GUIDE SLEEVE TRAVEL**

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 650

travel mm : 5.10...5.40

3rd speed rpm : 1100

travel mm : 7.90...8.30

4th speed rpm : 1180

travel mm : 9.50...10.00

**GUIDE SLEEVE POSITION**

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.10...17.90

**FULL LOAD DELIV. AT FULL LOAD STOP**

1st version

Speed rpm : 1050

Aneroid pressure h: 700

Del. quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

#### RATED SPEED

1st version  
Control lever  
position degrees: 50...58

#### Testing:

1st rack travel in: 12.80  
Speed rpm : 1090...1100  
2nd rack travel in: 4.00  
Speed rpm : 1150...1180  
4th rack travel in: 1300  
Speed rpm : 0.00...1.00

#### LOW IDLE 1

Control lever  
position degrees: 14...22

#### Testing:

Speed rpm : 200  
Minimum rack travel: 8.00  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20

#### CONSTANT REGULATION

Speed rpm : 300...400

Aneroid/Altitude  
Compensator Test

#### 1st version

##### Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

##### Measurement

Speed 1/min : 500

1st pressure hPa : 240  
Rack travel in m: 12.30...12.40  
2nd pressure hPa : 350  
Rack travel in m: 13.30...13.50

#### START CUT-OUT

Speed 1/min : 220 (240)

#### FUEL DELIVERY CHARACTERISTICS

#### 1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 197.0...201.0  
1000 s: (194.0...204.0)

N25

Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: 700  
Speed rpm : 900  
Del. quantity cm<sup>3</sup>/ : 204.0...208.0  
1000 s: (201.0...211.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)  
Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 157.0...159.0  
1000 s: (154.0...162.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

#### BREAKAWAY

1st version  
1mm rack travel less than

full load rack tr: 12.80  
Speed rpm : 1090...1100

#### STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (156.0...184.0)

Remarks:

:



# BOSCH INJ. PUMP TEST SPECIFICATIONS

## Note remarks

Test sheet : MB 10,0 c 1  
Edition : 03.04.87  
Replaces : -  
Test oil : ISO-4113  
Combination no. : 0 402 745 802  
Injection pump  
Pump designation : PESSP120A720LS7101  
EP type number : 0 412 725 800  
Governor  
Governor design. : RQ300/1050PA690-1  
Governor no. : 0 421 801 392

Customer-spec. information  
Customer : DAIMLER-BENZ

Engine : OM429 LA

## TEST BENCH REQUIREMENTS

Test oil  
inlet temp. °C : 38...42  
Overflow valve : 1 417 413 025  
Inlet press., bar : 1.50  
Overflow  
quantity min. 1/h: 100...110  
Test nozzle holder  
assembly : 1 688 901 019  
Opening  
pressure, bar : 207...210  
Test lines : 1 680 750 067  
Outside diameter  
x Wall thickness  
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values  
Insp. values in parentheses  
Set equal delivery quant.  
per values

## BEGINNING OF DELIVERY

Test pressure, bar: 25...27  
Prestroke mm : 5.20...5.30  
: (5.15...5.35)  
Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288  
Tolerance + - ° : 0.50 (0.75)  
Time to cyl. no. : 5

## BASIC SETTING

1st speed rpm : 1050  
Rack travel in mm : 12.50...12.60  
Del. quantity cm<sup>3</sup>/ : 17.9...18.1  
100 s: (17.6...18.4)  
Spread cm<sup>3</sup> : 0.5  
100 s: (0.9)  
2nd speed rpm : 300.0  
Rack travel in mm : 6.0...6.4  
Del. quantity cm<sup>3</sup>/ : 1.6...2.2  
100 s: (1.3...2.5)  
Spread cm<sup>3</sup> : 0.8  
100 s: (1.2)

## GUIDE SLEEVE POSITION

Control-lever position  
Degree: -2  
Speed rpm : 600  
Rack travel in mm : 19.20...20.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version  
Speed rpm : 1050  
Aneroid pressure h: 700  
Del. quantity : 179.0...181.0  
1000 : (176.0...184.0)  
Spread cm<sup>3</sup> : 5.00  
1000 : (9.00)

## RATED SPEED

1st version  
Setting point:  
Speed rpm : 600  
Rack travel in mm : 20.0

Testing:  
1st rack travel in: 11.50  
Speed rpm : 1095...1110  
2nd rack travel in: 4.00  
Speed rpm : 1135...1175

4th rack travel in: 1300  
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring  
Speed rpm : 300  
Rack travel in mm : 6.1

Testing:

Speed rpm : 100  
Minimum rack trave: 7.70  
Speed rpm : 300  
Rack travel in mm : 6.00...6.20  
Rack travel in mm : 2.00  
Speed rpm : 380...420

Aneroid/Altitude  
Compensator Test

1st version

Setting

Speed rpm : 500  
Pressure hPa : -  
Rack travel mm : 12.00...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : 240  
Rack travel in m: 12.10...12.20  
2nd pressure hPa : 350  
Rack travel in m: 12.30...12.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700  
Speed rpm : 600  
Del. quantity cm<sup>3</sup>/ : 179.0...185.0  
1000 s: (176.0...188.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

Aneroid pressure h: -  
Speed rpm : 500  
Del. quantity cm<sup>3</sup>/ : 157.0...159.0  
1000 s: (154.0...162.0)  
Spread cm<sup>3</sup> : 8.00  
1000 s: (12.0)

BREAKAWAY

1st version

N27

1mm rack travel less than

full load rack tr: 11.50  
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100  
Del. quantity cm<sup>3</sup>/ : 160.0...180.0  
1000 s: (156.0...184.0)

Remarks:

: